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By- Nelson, Carl B.

THE EFFECTIVENESS OF THE USE OF PROGRAMED ANALYSES OF MUSICAL WORKS ON STUDENTS' PERCEPTION OF FORM. FINAL REPORT.

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Linearly programed materials used with musical references on magnetic tapes were compared to conventional listening materials used outside the classroom and to assignments for a college music course. The point of the comparison was to ascertain whether or not the programed materials significantly improved students' aural perception of the structural components of form relating to specific musical compositions. Over 300 non-music majors in three classes were rated at one of 10 levels according to their performance on a music achievement test and then assigned at random to six treatment groups and a control group for each class. The evaluative devices used following treatment were tests for five specific skills, a follow-up test for transfer, and a preference inventory. Results indicated that the programed materials increased the students' perception of musical form in the works studied to a significantly greater degree than did the conventional materials. But there was no significant indication that the programed materials led to greater transfer of learning than did the conventional materials. Preferences for particular compositions were not affected by studying the programs. The students indicated on a questionnaire that they preferred the programmed materials to the conventional ones. Experimental materials are appended. (BB)

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U.S. DEPARTMENT OF
HEALTH, EDUCATION. AND WELFARE

Office of Education
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Final Report

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The Effectiveness of the Use of Programed Analyses of Musical Works on Students' Perception of Form

Carl B. Nelson

State University of New York
College at Cortland

Cortland, New York

December 16, 1967

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CBN

SUMMARY

The purpose of this investigation was to determine whether or not individuals' aural perceptions for the structural components of form relating to specific musical compositions can be more highly developed using programed analyses of the work than by studying the works with conventional materials and aids. The following hypotheses were formulated to be tested:

1. All things being equal, a student's perceptive skills relating to the components of structure in a musical work will be greater when

    a. the student studied the composition under examination using an adjunct linearly constructed program with inserted magnetic tape musical references.

    b. the student studied another composition than that under examination but having the same musical design (i.e., rondo, variations, etc.) using an adjunct linearly constructed program with inserted magnetic tape musical references.

    c. the student studied a greater number of compositions using adjunct linearly constructed programs with inserted tape musical references.

    d. the student studied earlier in the term a composition using an adjunct linearly constructed program with inserted magnetic tape musical references.

2. Students who have completed the programed analyses will demonstrate a greater preference for absolute music than students not exposed to the adjunct programs, and the more adjunct programs completed, the more likely that this difference will be observed. Preference will be greatest for compositions of the musical form studied using the adjunct materials.

Three movements of symphonies from the Classic period were selected to be programed: 1. the first movement of Mozart's 40th Symphony in g minor (sonata-allegro), 2. the second movement of Haydn's 94th Symphony in G Major (variations), 3. the fourth movement of Haydn's 101st Symphony in D. Major (rondo). Each of the programed tests was structured to be used with an adjunct tape of musical references in order to remove the restriction of the usual requisite ability to read the musical score.

However, the score was provided in the event that students could take advantage of it.

The sample selected for the experiment was 339 non-music major college undergraduates enrolled in a one semester introductory music literature course entitled Foundations of Musical Expression. The students were grouped in three sections, each with a different instructor. The experimental materials were used for outside-of-class assignments only.

Perceptive skills relating to the three programed works were measured by three achievement tests. Transfer of learning was evaluated by the administration of achievement tests of similar construction of three unfamiliar works in the same form as those programed. The criterion developed to determine changes in the subjects' preferences brought about by the experimental materials was an inventory consisting of all possible paired comparisons of the three programed works and three selections classified as "program music". Finally, a questionnaire was used to assess attitudes of students who used the programs to the value of the experimental materials.

The use of a balanced multiple comparisons design made it possible to test the hypotheses concerned with the perceptive skills in several ways. Since the total sample of subjects was grouped into three separate sections, the experimental conditions were replicated by class and instructor.

Each achievement test was constructed so that in addition to the total test, it was possible to determine perceptions of individuals in five subtests: harmony and tonality, knowledge of form, melody, rhythm, and timbre. Some of the subtests were found to have unusually low reliability indices; the low proportion of significant differences between experimental and control subgroups in some of the subskills probably was due in large degree to this circumstance. Tests of the hypotheses listed above provided evidence for the following conclusions:

Hypothesis	Conclusion
1a	Individual's aural skills relating to a given work are developed significantly more when the work is studied by the use of a programed analysis and tape adjunct than the aural skills of persons who study the same work by means of textbooks, conventional library references, and recordings.

Hypothesis	Conclusion
1b	The form of a composition does not appear to be a significant factor in facilitating the transfer of aural skills from one composition to another even though a programed analysis is the means of instruction in the earlier composition.
1c	A direct relationship between numbers of programed analyses studied and a significantly keener aural perception of variations of modifications of musical sounds in works not previously audited cannot be clearly established.
1d	The transfer of an individual's aural skills developed earlier to an unfamiliar work is not significantly modified by the factor of relative time placement in a term of study that a programed analysis is introduced.
2	An increase in the amount of knowledge an individual has concerning a particular composition does not seem to be a factor in modifying his preference for that composition as listening fare compared to others. Nor are preference patterns for music categorized as program music or absolute music determined by an individual's aural skills in general or as these relate to specific compositions. Studying a composition by the use of a programed analysis is not a factor in modifying students' preferences for that composition when compared to compositions studied by conventional means.

Also, data from the questionnaire survey revealed that the majority of the students appreciated the guidance of the programed analyses. They felt that the programs were powerful instructional tools and that they learned a great deal from them. Survey data and observations made during the experimental procedure revealed that the use of programed analyses in a course of instruction in music literature presents no unique problems with reference to practical considerations such as staffing, space or students' manipulation of the tape equipment.

CHAPTER I

INTRODUCTION

Statement of the Problem

It is generally recognized that individuals who have a nominal background of music training have considerable difficulty in perceiving the structure of large musical forms. The subtleties of combinations and arrangements of the components which comprise the work are elusive to them and often escape their attention. Even though they may have been exposed to formal courses in which the aim is to teach them the basic skills and foundations of theory, the gap between these knowledges and audio recognition of the musical components within the context of large art forms is considerable. In short, teaching individuals to learn to listen intelligently to a complex musical structure is not an easy task.

Many music educators share the opinion that only those individuals who have a reasonably good foundation in music have the necessary skills to profit from instruction in serious music literature. Furthermore, some educators believe that performing experience is a necessary prerequisite for those who expect to develop a satisfactory degree of sensitivity and sophistication to musical expressions because as performers it has been absolutely necessary for them to become actively involved in the structure of musical forms and have consequently discovered at first hand how a given work is shaped.

Students who have a limited background in aural skills and music theory often say that they do enjoy listening to music but are unaware of the source of their pleasure. They seem to recognize that their enjoyment derives from the total "mass" of the sound rather than through an appreciation for the development of the architectural structure. The main impact of the music for them apparently is a generalized emotional response to undifferentiated sounds.

Much listening to great works of musical art with the guidance of a competent instructor will do much to help the student sharpen his perceptive powers. With large and ever-growing classes and/or numbers of classes in introductory music literature courses, however, ways and means must be developed to maintain efficiency of instruction without a corresponding increase in cost. Large classes are now common in many schools which offer students an exposure to great works of musical literature. In many institutions, courses developed for this purpose are required, at least for arts and sciences majors. It becomes imperative that students are expected to complete outside-of-class listening assignments as partial fulfillments of course requirements. Two primary obstacles face students in preparing these assignments: a) their limited aural acuity, and b) their unfamiliarity with the orchestral score.

Analyses of assigned works by means of linear programing* using specially-prepared magnetic tape adjuncts to a written test for each composition seem to hold promise. This procedure should prove to be practical and effective since such an analysis a) can be built to reach the student with a limited background of knowledge in musical skills, b) would allow the student to proceed at his own rate of speed and c) would include a tape which can provide direct allusions to specific sounds of the work rather than requiring the student to interpret music notation symbols. Multiple copies of the tape and text would enable each student to modify the use of the teaching materials to suit his own needs, so that numbers of students to be accommodated need only be limited by the number of tape transports and headphones available.

The construction of programs to instruct individuals in increasing their aual acuity relative to musical sounds is not new. As will be shown later, other researchers have carried on investigations which were limited to teaching single entities (dimensions) of sound such as melodic structure, recognition of intervals and the like. The skill involved in perceiving the patterning and structuring in a major musical work as it takes shape seems to be a behavior of a higher order than the perception of short and direct "uni-dimensional" musical stimuli. Hence it is pertinent to ask the question a) can analyses of certain musical works be programed for individuals whose basic training in music is informal, and b) will such analytical programs be sufficiently effective teaching tools for increasing their aural perception (relating to the design of the work) to merit their use?

---

*The term "programing" here refers to the technique of arranging material to be learned in such a way that a student can reach desired objectives by proceeding through a series of carefully constructed small steps. The student must actively respond to questions or must complete statements at each step. He is asked to check his responses with those supplied by the author of the program; if the device is properly constructed, he will respond correctly a high percentage of the time and the desired behavior is thus reinforced.

It would be of considerable interest also to discover whether or not programed analyses of certain musical works would modify the preferences of individuals in favor of the works so analyzed when compared to others. It has often been observed, for example, that persons with a nominal background of musical training will prefer to listen to programmatic music* since they are able to make references and associations to known objects or ideas when the musical stimulus is presented. However, when a composition with no programmmatic reference is performed, the untrained ear has little to guide it - unless, of course, the individual responds in a simple emotional manner to the total effect of the sounds; hence the person may tend not to "like" it as well as a programmatic composition.

A measure of preference change would provide evidence to test the validity of the assumption that increased knowledge about a work will modify a person's preference for the composition. The relevance of this finding is apparent since preference for particular kinds of music obviously is an important factor in an individual's choice of listening fare. Thus, for example, such preferences could affect which concerts he attends, which recordings he purchases, or in the case of a teacher, which compositions are selected for a listening lesson.

In summary, many persons with a limited background of skills in music who wish to acquire some basic knowledge of music literature beyond a superficial acquaintance are not sufficiently skilled to perceive the structure of a relatively complex art form. It is important that individuals learn to make essential aural discriminations within the context of these works. This is exceedingly difficult for the minimally-prepared student who finds himself at a loss to know how to listen when a) his ear is not trained to make certain discriminations and b) his ability to follow the orchestral score as a guide is limited. The problem posed in this investigation is to discover if it is possible and feasible to utilize a linear programming technique for the anlysis of a given work when magnetic tape adjuncts are used as guides rather than music notation and the conventional orchestra score.

This investigation was planned to discover if analyses of compositions could be programed, whether such techniques are practical and whether or not the programs are efficient instructional tools for the student. The experimental design is constructed so that tests can also be made of the relative value of programs based on compositions written in certain forms,* their order and their placement in the term as well as the effect of the number of programs read. Therefore, the following hypotheses were set up to be tested:

---

*Programmatic (or "program") music is instrumental music which is expressly written to describe moods or topics suggested by the title or the program accompanying the music.

1. All things being equal, a student's perceptive skills relating to the components of structure in a musical work will be greater when
    a. the student studied the composition under examination using an adjunct linearly constructed program with inserted magnetic tape musical references.
    b. the student studied another composition than that under examination but having the same musical design (i.e., rondo, theme and variations, etc.) using an adjunct linearly constructed program with inserted magnetic tape musical references.
    c. the student studied a greater number of compositions using adjunct linearly constructed programs with inserted magnetic tape musical references.
    d. the student studied earlier in the term a composition using an adjunct linearly constructed program with inserted magnetic tape musical references.
2. Students who have completed the programed analyses will demonstrate a greater preference for absolute music** than students not exposed to the adjunct programs, and the more adjunct programs completed, the more likely that this difference in preferences will be observed. Preference will be greater for compositions of the musical form studied using the adjunct materials.

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*In this study, rondo, sonata-allegro, and theme and variations were examined.

**Absolute music describes music which is intended to have as its principal focal point the form or the design itself for the listener's enjoyment.

Review of the Literature

The following section of this chapter will be a review and an evaluation of studies in music education which were designed to assess the contribution of linear programing techniques in increasing individuals' aural perceptions for specific musical sounds. Some investigations which have indirect relevance to this study will also be discussed. Although programed instruction in music education is not new, Varty (1966)[1] points out in his on-going survey of the use of programs that the general area of fine arts, compared to the field of natural sciences, has made relatively little use of them in formal instruction. No reports are available which appraise the effectiveness of programed instruction as a means of improving the aural perception of individuals relating to the design of works of particular musical forms. Rather, research in programed techniques consistently has referred to improvement in basic aural skills taken singly and outside specific art structures.

The technique of using a printed text accompanied by a tape in programing musical sound has been shown to be both practical and feasible. Kanable (1964)[2] recently completed a doctoral experiment involving a programed approach to sight singing using students enrolled in the Summer High School Music Project at Northwestern University. This was an effort to discover if the programed text-and-tape technique could be used to give students an adequate background in music before they entered college course work. The programed text-and-tape method reportedly seemed to be a practical plan of teaching for the development of basic music skills used in sight singing. In such a course, the emphasis is placed upon recognition and performance of rhythmic and melodic patterns.

Carlsen (1964)[3] supported Kanable's conclusions in a paper delivered at the March, 1964, Music Educators National Conference in Philadelphia. He also reported that Maltzmann at Harvard University is seeking to discover whether through programing devices, certain identifiable discriminations by individuals can be observed in the development of young children as they try to develop perceptive skills in music. While his work has little relevance to the design of the present study, it is cited to lend credence to the proposal that aural perception in music can be developed through programed instruction.

Two recent studies have been published to support the contention that individuals can teach themselves to develop fine aural discriminations through a programed course of instruction. The first of these was reported by Spohn (1963)[4]. He and his coworkers programed melodic and harmonic interval material for students entering the Ohio State University School of Music. They discovered that students using the program did significantly better than the comparison group. Unfortunately, Spohn's conclusions can only be accepted as tentative since his experimental subjects were those who completed the programed course of study while his comparison group (controls) were students who, for unknown (or at least unreported) reasons, chose not to complete the program.

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[1] Footnote references are listed at the end of Chapter IV.

In the same paper, Spohn stated that different methods of programing appear to result in different outcomes and his findings indicate that for some elements of music, certain combinations of stimuli and modes of presentation vary in their effectiveness. He attributes this to differences among learners themselves. The importance of this statement to the present investigation is that programing material for music majors possibly is a different procedure than for non-majors. However, Spohn presents no statistical data to support his point of view.

The second reference is provided by Ihrke's work (1958)[5]. He presented the pedagogical and psychological bases for his research in the development of an automated device for the perception of rhythm. Ihrke is working to achieve three objectives in programed instruction: a) develop equipment in which the response is rhythmic performance, b) develop equipment which provides immediate and instantaneous feedback to the student, and c) develop an effective training program. Here again, the central aim is to help the individual achieve aural sensitivity to a single aspect of the musical texture.

The contributions of two educators who have constructed techniques to develop students' awareness for the total musical expression in the context of an art work are relevant to this discussion. They are important because the teaching procedures each person developed are systematic and planned experiences to aid the students to grasp the music's sense through a "guided tour" of the shape and design as the work is being presented.

Kearns (1964)[6] claimed a successful attempt at teaching non-music majors to listen for specific musical structures using illustrations on magnetic tape. His method consisted of recording the composition and then dubbing the instructor's voice on the tape directly over the music providing spoken numbered reference points for the students. The subjects were given drill sheets on which they were to match the lettered responses on the sheets-- which represented ideas about the music--with the numbers called out on the tape. Kearns' procedure differs significantly from the present research project in three ways: a) the subjects listened in groups rather than individually, b) the material presented was not programed in small graduated steps, c) no attempt was made to call attention to the craftsmanship or artistry of the composer in his expressions; instead the instruction consisted of a simple numbering of the parts which then the students were asked to identify.

Mueller (1964)[7] utilized a visual medium of communication rather than sound to help students perceive the structure of the art form. She writes that she used a device to teach non-music majors about form by means of charts. These charts showed the motifs, developments, and to some extent, the harmonization of a number of musical compositions in color. The charts were twelve inches high and sometimes as much as twenty-five feet long. Thus the student could look at a chart of the form as the music was presented. This method, unfortunately, requires that the student have sufficient skill to read musical notation in order to follow the device; for him to pick out the music represented on the chart by notation from the complete tapestry of sound he hears calls for an ability he often does not possess.

The studies discussed above clearly demonstrate that a method of reaching the non-music major is needed employing a system he is able to utilize. The majority of students are nonetheless basically capable of recognizing most variations in the sounds themselves. Certainly if they are not capable of the latter, it will do little good to attempt to develop their comprehension through the notation. The investigators have shown that it is practical and feasible to use magnetic tape adjuncts with programed texts to develop aural skills prerequisite to the perception of musical design. It has also been shown in the preceding evaluation that the efforts made to date have concerned themselves with the improvement of perception in specific single dimensions of musical sounds, or more specifically, outside the context of the art form.

CHAPTER II

METHODS

The purpose of this chapter will be to state in detail the basic features of the experimental design and the procedure used for its implementation. Emphasis is given to a description of the sample of individuals selected for the experiment, assignment of subjects to the various treatment subgroups and the experimental treatment. An outline of the relevant aspects of the instructional materials used both for the experimental and control groups is presented. The criteria used to compare the subgroups as determined by the experimental design as well as the pretest which was used as a blocking variable are introduced in this section of the report. Finally, the system of controls which were built into the design to suppress undesirable sources of variation is explained and discussed.

Selection and Description of the Sample

The central objective in this investigation is to note the effect of carefully prepared programed analyses of certain large musical forms as teaching devices for the students who have had neither the benefit of special music preparation nor intend to continue serious study of music. At the college level, such individuals enrolled in music courses are indentified as non-music majors. It is to be expected, of course, that a certain percentage of non-majors enter college with a fairly good background of experiences in music. However, the majority of them have considerable difficulty in reading the musical score and an even larger proportion of these individuals have untrained ears; that is to say, their aural perception is generalized rather than attuned to particular sounds and sound patterns. For such students who expect to register for courses to learn about music of Western civilization, a semester of introductory general theory and ear training is often required. However, it has been noted that there is a formidable gap between successful achievement in beginning theory and ear training and the ability to apply these to the new situation of aurally perceiving the structural components of major musical expressions (which form the basic content of such music literature courses).

It is to this large population of college students that the investigation is addressed, although certainly the results could be generalized to any like group of individuals. The author selected as his sample of subjects non-music majors at State University College, Cortland, New York, registered in the course Foundations of Musical Expression II during the second semester of the 1966-67 academic year. The broad aim of the course is to develop the ability to listen intelligently to music; the subject matter content is limited to the great music of Western civilization mainly from the 17th century to modern times and taught within an historical context. The class meets three hours per week for a total of three semester hours of credit. The prerequisite is Foundations of Musical Expression I, which is a course in elementary theory and ear training.

For the purposes of the experiment, students were permitted to select any one of three, different sections (each was instructed by a different professor). The total number of students enrolled in Mu 112 was 339; Class registrations were as follows: Class I, 124; Class II 109; Class III, 106. Table I shows the distribution of students in each of the classes according to major field of concentration and classification.

Table 1

DISTRUBUTION OF ALL STUDENTS ENROLLED IN MU 112
SPRING SEMESTER, 1967, ACCORDING TO MAJOR
FIELD OF STUDY AND CLASSIFICATION

	Classification				
Major	Freshman	Sophomore	Junior	Senior	Totals
Elementary Education	20	150	5	14	189
Secondary Education	17	57	7	11	92
Physical Health & Recreation Education	10	0	0	0	10
Liberal Arts	24	15	5	2	46
Totals	71	242	17	27	337[a]

[a] Although 339 students registered for the course, two students dropped out of class at mid-term because of illness.

Each class was subdivided by the instructor into four small "laboratory" or "recitation" sections so that he could choose to meet in a single large lecture session or with groups of students for discussion as the need arose. However, the registration schedule indicated that students would be required only to meet a total of three hours per week in some combination of lecture, and/or discussion. The instructors were free to modify the class schedule as they wished; in fact no restrictions were placed on the professors save two: a) sufficient class time was to be released to the investigator for testing, and b) no instruction was to be given using the compositions chosen for the experiment. It was hoped that keeping the amount of intrusion due to experimental manipulations at a minimum would preserve as normal a setting as possible.

One instructor (Class III) chose to meet his class four periods per week; the fourth period was a required "listening" session. The instructor felt this was a necessary adjustment since the testing periods due to the experimental design used up nearly one-fourth of the term. The other two instructors did not modify in this manner.

At the beginning of the term, in each of the three sections, the students were pretested on Colwell's EMAT*. On the basis of the distribution of scores from this testing, students on each section were blocked into ten ability classifications from high to low. Within each ability block or classification, students were randomly assigned into one of seven treatment groups (see Figure 1 below). The purpose for the blocking, of course, was to make the comparisons among the subgroups more powerful.

Experimental Treatment

The experimental treatments consisted of studying either one or two of the three programed analyses constructed for this investigation. A complete description of these materials will be given later in this chapter. None of these materials was intended for use in the classroom; all the compositions upon which the programs were based were assigned for individual outside-the-classroom study. No experimental variables operated within the confines of the classroom; that is to say, treatment and instruction were the same for all students in all three classes within the classroom.

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*The EMAT (Elementary Music Achievement Test) authored by Richard Colwell and published by Follet, measures the ability of students to differentiate sounds according to pitch, rhythm, modality (melodic and harmonic) and tonality (see references, item 8 at end of Chapter IV).

The control treatment was the conventional means which music departments generally use for outside-of-class listening assignments. Students had access to disk and tape recordings of the compositions, an orchestral score, and reference texts of different kinds. A common reference text used at Cortland is Moore and Heger The Symphony and the Symphonic Poem, published by Ulrich's Books, Inc. (1966)*. Often the texts for the course have analytical summaries of the compositions to which the students have been assigned. All of the conventional materials (disk and tape recordings, scores, reference books, and sound reproducing equipment) are located in a central room known as the music library. The maximum number of students which can use the facilities at one time is 32.

Once an assignment is made for outside preparation, the student normally is expected to obtain the necessary score, recording, and reference literature through the use of the card catalog. From that point on, he must draw upon his own resources to put meaning into the sounds he hears.

The Experimental Materials. The author programed three representative instrumental compositions of symphonic proportions from the Classic period, each in a different form. The forms chosen were rondo, theme and variations, and sonata-allegro. Selecting for the experiment works of different styles or from different periods could possibly introduce undesirable or irrelevant variations among the subgroups. For this reason, each work is a single movement of a symphony from the Classic period. It also was tempting to consider the possibility that purer examples of a particular form -- such as the rondo, for example -- might be obtained from chamber music works (i.e., string quartets, piano trios, quintets, etc.) which would illustrate various techniques better, or to include movements or sections from larger compositions such as oratorios or concerti. It may be that such dimensions could have made for an interesting study, but in order to establish the controls necessary to test the hypotheses, the works were purposely chosen for their similarity on the basis of non-experimental criteria.

The compositions programed were as follows: a) the first movement of Mozart's 40th Symphony in g minor (sonata-allegro form), b) the second movement of Haydn's 94th Symphony in G Major (theme and variations form), and c) the fourth movement of Haydn's 101st Symphony in D Major (rondo form). The recordings from which the audio examples were taken were a) Mozart's 40th, the Berlin Philharmonic with Ferenc Fricsay conducting, (Deutsche Grammophon Gesellschaft), b) Haydn's 94th, the Berlin Philharmonic Orchestra with Karl Richter conducting, (Deutsche Grammophon Gesellschaft) and c) Haydn's 101st, the Berlin Philharmonic Orchestra with Karl Richter conducting, (Deutsche Grammophon Gesellschaft).

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*The works assigned in this experiment are all analyzed in Moore's and Heger's text (see references, item 9).

The programs consist of the printed (ditto-duplicated) text, the magnetic tape adjunct, and the orchestral score (miniature-sized). The text is in either three or four sections, depending upon the convenient lay-out of the material. In each of the three programs, the first section deals with a review of the particular form without direct reference to the music. For example, in the sonata-allegro form, the first section takes the student through the specific aspects of the classic structure so that he not only learns the definitions of terms but also their meaning and relevance in the context of the entire form.

The remaining sections of the sonata form program are built from the consideration of the music itself: acquaintance with thematic material, the development of the material and most of the techniques the composer used to shape the work into the entire artistic structure. One section deals with the exposition section of the work, another with the development and another with the closing restatement section. At convenient places, summaries are presented in order that the student can hear the smaller segments of the work in a larger perspective. At the beginning of that part of the program dealing directly with the sounds of the music and also at the end of the text, the entire movement is played on the tape. Major parts of the movement (i.e., the coda, a single variation, the development section, etc.) are also treated in the same way in order to bring the student from an acquaintance and understanding of smaller segments to the realization of the entire sub-structure. Thus, the general plan of each program is a synthesis-analysis-synthesis approach.

At no place in the program is the student required to understand the score in order to grasp the significance of the building process. Whenever a reference is made to the music, the sound of the music is the stimulus rather than the notation of the sound. This is accomplished by presenting excerpts of the music either by recording the appropriate section from the record or by means of a piano excerpt. A piano excerpt is inserted only when the music is sufficiently complex to warrant an isolation of the relevant thread of sound under examination. At times it becomes necessary - on the tape - to give verbal cues to alert students to the specific dimension of the excerpt to which attention is called.

In every instance when reference is made to an excerpt of the sound of the music, a line score of the recorded excerpt is included in the frame. This is done to help students become acquainted simultaneously with the symbolic representation of the sound. However, no demand is made of the student to master the score. Each of the sounds which is programed on each frame is also outlined for the student in the orchestra score. Therefore, reference to the sound is made in three places: first, and most important, the recorded sound on the tape; second, on the line score found on the frame itself; third, in the orchestra score. In order that the student can refer quickly and easily to the orchestra score, each measure in the score is numbered and sections of the score referred to by measure numbers.

Directions in each of the programed texts point out to the students that it is perfectly all right to repeat recorded excerpts as often as they wish to do so in order to be sure the excerpt has the impact it is intended to make. This is an important aspect of the programs' value because listening habits of many individuals are geared to the custom of one listening or, at best, repeated auditions of the whole work. This is in contrast to study habits of students using verbal stimuli; students are accustomed to re-reading sentences or even phrases. The structure of the program using taped excerpts makes this procedure just as feasible using sound stimuli as it is with verbal cues. Manipulating tape for repetition is a much simpler task than re-setting the stylus on a disk recording and the probability of injuring the equipment is much less. Hence, tape equipment encourages the student to audit short sections or excerpts repeatedly to perceive the finer details of the music's structure. The author believes this pattern of learning to listen to music is as effective as that of the performer who is learning to reproduce a musical work. In the latter situation, a serious student will often rehearse very short portions of the composition in order to perfect it; it is considered generally to be a poor learning technique simply to repeat the entire selection.

Eight copies of each of the three programs (including tapes and scores) were made available for the subjects in the experimental groups. As will be explained in detail later, the students in each of the three classes were assigned different compositions during the same periods so that it was considered sufficient to provide eight copies of each program.

Each program was pretested on small samples of individuals to provide information useful in editing and revising the texts and the taped references. Responses to the frames were checked in order to keep the error rate to a level of ten percent or less.

Procedure. The schematic below (see Figure 1) summarizes the differences in treatments among the subgroups for each class. As

Class	Group Within Class	Time Period (order of events)			
		1	2	3	4
I	O_oR_a	E_1O_1	E_2O_2	C_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_b	E_1O_1	C_2O_2	E_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_c	E_1O_1	C_2O_2	C_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_d	C_1O_1	E_2O_2	C_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_e	C_1O_1	C_2O_2	E_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_f	C_1O_1	E_2O_2	E_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
	O_oR_g	C_1O_1	C_2O_2	C_3O_3	$O_1{'}O_2{'}O_3{'}O_4$
II	O_oR_h	E_2O_2	E_3O_3	C_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_i	E_2O_2	C_3O_3	E_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_j	E_2O_2	C_3O_3	C_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_k	C_2O_2	E_3O_3	C_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_l	C_2O_2	C_3O_3	E_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_m	C_2O_2	E_3O_3	E_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
	O_oR_n	C_2O_2	C_3O_3	C_1O_1	$O_2{'}O_3{'}O_1{'}O_4$
III	O_oR_o	E_3O_3	E_1O_1	C_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_p	E_3O_3	C_1O_1	E_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_q	E_3O_3	C_1O_1	C_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_r	C_3O_3	E_1O_1	C_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_s	C_3O_3	C_1O_1	E_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_t	C_3O_3	E_1O_1	E_2O_2	$O_3{'}O_1{'}O_2{'}O_4$
	O_oR_u	C_3O_3	C_1O_1	C_2O_2	$O_3{'}O_1{'}O_2{'}O_4$

Figure 1

Schematic of Experimental Design

(key for symbols on next page)

Key for Symbols in Figure 1

$R_a \ldots R_u$: Randomly assigned groups within each class.

E: Experimental treatment consisting of adjunct linearly constructed program with inserted magnetic tape musical references.

C: Control treatment included in the experiment under the same conditions as the experimental treatment except for the adjunct programs.

O: Observation on a dependent variable.

1, 2, 3, 1', 2', 3', 4 subscript index numbers refer to the specific content of the observation. (o is a test to ascertain extent of musical background), 1 is the rondo design selection described in the experimental materials; 2 is the theme and variations design selection described in the experimental materials; 3 is the sonata-allegro design selection described in the experimental materials; 1', 2' and 3' are the "transfer selections" in the respective designs; and 4 is paired-comparison instrument to measure preference for "absolute" vs. "programmatic" music.

will be pointed out in greater detail later, this arrangement made it possible for the investigator to test a particular hypothesis in several ways in a given class as well as to replicate the observations in each of the other two classes.

Students were randomly assigned into one of six experimental subgroups or the large "general control" subgroup. The random sorting of students did not take place until after the administration of the Colwell EMAT test, which provided the data upon which the blocking was based. In this way, it is possible to say that the seven subgroups were essentially equivalent on skills as measured by the EMAT. Final assignment of students into the subgroups was not made until the last day of "drop-and-add" in the term in order to minimize the probability that the selected students would drop the course.*

Twelve tape transport stations were placed in a separate room on the same floor on which the listening room used regularly by the music department was located. All students assigned to the programed materials for study were requested to use this facility. During the interval of time the experimental treatment was in progress, student supervisors were assigned to this room as well as to the regular listening room. The duties of the room supervisors were as follows: a)verify that the students who used the "experimental" or "control" materials were indeed assigned to be there, b) distribute necessary materials, c) distribute and collect time sheets so that a record could be made of the amount of time each student spent listening. This system provided an adequate control so that it was virtually impossible for students to have access to the "wrong" teaching materials.

For each of the three compositions assigned for outside listening during the differential treatment all students received a copy of an assignment sheet, which was distributed in the classroom. (See Appendix B for a copy of this form.) Complete directions were included on the form together with the names of the students who were assigned to the experimental materials.

In order to accommodate the students, both listening areas** were manned by supervisors for a total of 65 hours each week. The only day during the week that the centers were closed was Sunday. It was discovered that this schedule provided ample time for the students' preparations for the criterion tests. No limit was placed on any individual's listening time in either facility. Although students were urged to complete their assignments, the author felt it inadvisable to insist on completion or bring pressure to bear on students in either the experimental or control groups to study the assignment. Occasionally, students were reminded to study for the tests, particularly when it appeared that failure to report to either center was due to an oversight or to other factors not associated with a willful absence. Data from the time sheets revealed the fact that a high percentage of students participated, as expected. The mean number of minutes that each experimental group spent on the programs is tabled in Chapter III(see Table 10).Note that the mean number of minutes spent studying each of the programs decreased with each succeeding assignment within each class. The largest single contributor to this phenomenon probably is the fact that, as the semester wore on, the pressure of other school work continued to demand a larger share of the students' study time. Note also that the gradient of the decrease is approximately the same for all classes.

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*The experimental subgroups remained intact except for two students who dropped out during the last month of the term because of illness.

**The room in which the experimental materials and equipment were housed was referred to as the Tape Listening Room; the regular listening room was called the Record Listening Room.

For listening experiences assigned by the instructors, students used only the facility housing the conventional materials. There was no attempt to keep data on listening time for these assignments.

One month prior to the end of the term all students were asked to listen to three programmatic works also of symphonic proportion. These compositions were the orchestral suite Scheherazade by Rimsky-Korsakov (The Young Prince and the Young Princess), the symphonic poem Die Moldau by Smetana, and the concert overture Romeo and Juliet by Tchaikowsky. Multiple copies of the recording and the orchestral score were placed in the record listening room; there was no attempt made to differentiate assignment preparation.

It will be recalled that the purpose for this procedure was to test the hypothesis that students who studied the symphonic movements, categorized as absolute music, by means of the experimental materials would be different than the other students in their preference rankings of absolute music compared to programmatic music. It was hypothesized that the "experimental" students would show a greater preference for absolute music than the "control" students.

The assignment sheet specified that the students were to be tested on each of these compositions during the last part of the term. However, class schedules became too crowded to permit the investigator to carry out this plan.

Time Schedule. As will be noted from the calendar for the spring semester in Appendix B (page 127), the first assignment was not made until nearly three weeks of the term had elapsed. This was done in order to give the instructors sufficient time to review the elements of music (which was the subject of the preceding course) and to introduce general concepts dealing with form.

The interval of time between each of the three assignments and the subsequent test based on each assignment was approximately ten days. This interval of time was felt to be necessary in order to give students sufficient time to listen as well as to maintain an optimal amount of continuity for the professor's instructional program. The intervals between each of the three follow-up achievement tests - for which no preparation was necessary - was one week; this aspect of the testing was carried on in the last month of the semester.

The Criteria

General restrictions, each of which shaped the criteria to some extent, are as follows: a) each complete test had to be administered in a single class period of fifty minutes, b) the major portion of each achievement test had to be limited to measures of aural acuity in order to test the hypotheses, c) the source of verbal and aural stimuli was limited to the composition studied, d) a scoring system yielding data which could be handled quantitatively was desirable, and e) skills had to be sampled in such a way that the experimental group would not be favored; i.e., the specific references made in the experimental materials should be avoided.

The Achievement Tests for the Assigned Works. The tests which measured the students' achievement on the assigned compositions were administered in the first three time periods of the experiment. (Please see Figure 1 on page 17.) These instruments were somewhat different than the follow-up tests, which were used to measure the amount of transfer in the latter three time periods; these will be described in detail below.

Each test was constructed to measure five skills; thus, a measure was obtained for each of five groups (or subtests) of items as well as the total score. The investigator grouped items into the following categories:

1. Rhythm. The ability to hear basic rhythmic and metric patterns and deviations from them.
2. Melody. The ability to perceive and identify melodic subjects as thematic material, connecting passages, new material and relationships of melodic patterns to each other.

3. Harmony and tonality. The ability to perceive harmonic modifications and variations and to sense tonality and departures from tonality reference points.

4. Timbre. The ability to identify tonal characteristics of choirs of instruments and tonal variations in a single instrument or groups of same instruments (e.g., the first violin section). This skill may be considered synonomous with awareness of the dimensions of orchestration.

5. Knowledge of general form. The ability to identify large patterns of a work and the relationship of smaller units to the whole. This skill includes a demonstration of knowledge of the particular form under study without aural reference to the music.

Items were not clustered within the test by subtest classifications; a more effective measurement procedure seemed to be served by ordering the items according to the kind of task presented at a given moment. However, each subtest contained ten items so that each skill was sampled the same number of times.

As the construction of the measuring instruments progressed during the trial period, certain basic features assumed importance:

1. The test should present the stimulus material in its original setting. To simplify the stimuli by "masking out" the accompanying sounds would reduce the validity of the test because the testing situation is then different than the situation to which the generalization is being made.

2. Problems should be in the form of items which are presented at the time that the audio stimulus is heard. To wait until later would introduce the variable of tonal memory; the study is not concerned with this aspect of listening ability and no generalizations are intended to be drawn concerning it.

3. Within reasonable limits, items should deal with a single aspect of the many sounds which the subjects hear within the total configuration of the reference. In this way, it is possible to draw conclusions concerning variation among the subjects' subskills.

4. The intervals of time consumed in reading and responding to verbal cues had to be short. If this could not be done, the amount of time devoted to reading and listening would reduce the size of the sample of items and the reliability of the test would be correspondingly reduced. Because the criterion tests had to be administered in the space of one class period, this was a vital factor.

5. In items containing both verbal and audio cues, the verbal stimuli should be stated as simply and concisely as possible because the audio cues normally were the primary stimuli.

6. The length of the audio cue had to be determined in part by the complexity of the skill being sampled. Another determiner was to select only the part of the work upon which the task was based; adding more conceivably could have confused the student.

7. Every effort had to be made to ensure that the student clearly understood the specific aspect of the task. This was a critical factor especially when audio cues were presented.

8. In most cases, the audio cues had to be repeated at least once in order that students could review their responses. This is consistent with normal testing procedure particularly when items are composed entirely of written verbal material. In the latter situation, subjects are in a position to reread the items. The validity of the test should be increased as a result of this technique because what is under examination is accuracy of perception rather than speed of response. Finally, repetition of cues probably eases the tension which usually obtains in this kind of a testing situation.

Taped references made from the recordings were used as audio cues. No problem involving aural discrimination was presented without also first presenting the relevant excerpt or excerpts from the composition.

Oral directions necessary to the administration of the test parts dealing with the musical references were also placed on the tape. The musical references were spaced on the tape at intervals of time considered to be sufficient for the response and review. In this way, it was possible to maintain consistency of administration among the three classes. Once the tape was started, it was unnecessary to stop it until the testing was completed.

Questions dealing with a specific response to a musical reference were usually constructed in the form of alternate response items. This permitted the student to read the verbal cues quickly and released the major amount of his time for concentration on the audio cue. Multiple choice items would have detracted the student's attention from the audio cues because of the increased amount of reading time involved and also because more repetitions of the musical excerpts probably would have been necessary. Subjects were requested to respond to each of these statements with one of the following response codes: 1) confident it is true, 2) possibly true, 3) no idea, 4) possibly false, 5) confident it is false.

Mueller (1956)[10] and Ebel (1965)[11] demonstrate the usefulness of this technique of confidence weighting in similar situations.

It should be stated that the short musical references presented in the tests do not represent the initial contact the student has had with the music. All students had approximately ten days of outside preparation time and hence the musical stimuli should have been familiar to their ears. In a sense, therefore, the music references are made for the purpose of recalling a section of the composition with which they were supposedly already acquainted.

Approximately two-thirds of the items which called for aural discriminations were constructed so that two excerpts from the composition were played in sequence rather than a single phrase or section. The decision to structure the music stimuli in a "comparative" fashion was made after early trials of the testing procedure revealed that this increased the likelihood that verbal reference to the music would take on more meaning. That is, it appeared that the technique of comparison was a means of increasing the reliability and validity of the test. A typical item of this kind would read "The tones in the descending scale pattern of the first excerpt are in the same rhythm as those of the scale patterns of the second excerpt." Trial administrations of these kinds of items showed that this method was helpful in isolating the desired strands of sound or focusing upon a particular characteristic of the musical stimulus.

The scoring system using the confidence weights for the true-false items was arranged as follows:

For a "true" item		For a "false" item	
Confident it is true	= 5 points	Confident it is true	= 1 point
Possibly true	= 4 points	Possibly true	= 2 points
No idea	= 3 points	No idea	= 3 points
Possibly false	= 2 points	Possibly false	= 2 points
Confident it is false	= 1 point	Confident it is false	= 5 points

Multiple choice items were scored according to the following plan:

Keyed response = 5 points
Wrong response = 1 point
No response = 3 points

Students were instructed to respond to all cues as objectively as possible; all options were carefully explained in the directions printed on the test forms. Examination of a sample of the response patterns in each of the six tests indicated that all options were exercised by the students and that the frequency of non-response was relatively low.

The "possibly true" and "possibly false" responses were used much more often than the non-responses, even though a majority of students most frequently opted the extreme ends of the choice scale. Rarely, however, was it observed that students never exercised alternate choices to a "full-credit" response.

Each of the six achievement tests contained fifty items; hence, each instrument had the same theoretically possible range from a minimum of 50 to a maximum of 250 points. In practice, however, the range was much smaller; the observed minimum total score on any given test was approximately 130 and the maximum total approximately 240. Each of the five subtests for all six tests consisted of ten items, or one-fifth of each possible total score (i.e., 50 points).

The Follow-up Achievement Tests. One significantly different condition had to be accounted for in the construction of the follow-up tests (O_1' O_2' O_3'), it could be assumed that all students had heard the movement of the symphony prior to the test. However, in the follow-up tests*, this was not the case. It was deemed necessary for students to hear the total movement with a serious attempt made to preserve continuity before the test began. Due to the time restriction of one fifty-minute class period for a single test, it was decided to follow this procedure:

1. The first section of the test would be devoted to an audition of the work divided into four large sections. For example, in the sonata-allegro form, the sections were a) the exposition b) the development c) the restatement d) the coda. Five items would be built to be answered during the first audition of each section, making a total of twenty items (five for each section). These items were very short and succintly worded; in early trials it was apparent that the difficulty level of the items was such that students could listen to the section of the work and react to the items without unduly disturbing their listening. Each section was played only once. The function of each section in the composition (coda, exposition, etc.) was announced on tape previous to the audition of each separate section.

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*Based on Haydn's 100st Symphony (second movement) for the rondo, Beethoven's Fifth Symphony (second movement) for theme and variations, and Beethoven's 8th Symphony (1st movement) for sonata-allegro.

2. The remainder of each of the measuring instruments was similar to the first three tests in style and format. Short excerpts provided the auditory stimulus for items and each of these was usually repeated once.

3. Because students were unfamiliar with these words, it was expected that the grand means for each class would be lower than in the previous tests. This expectation was borne out.

The content validity of the achievement tests was perforce established by the fact that all the items which measured aural perception relating to the composition were taken from the composition itself. In other words, the samplings were not only a direct measurement of the skill which the test purported to assess but were taken from the same recording to which the students listened in preparation for their tests. Furthermore, items from the tests were submitted to a jury of five music professors (one was the music consultant for the investigation) concerning the validity of the tests with respect to their stated function. Finally, all the examinations were evaluated by the measurement and statistics consultant, particularly for criticism of item structure and format of the test forms.

An unfortunate aspect of the study was that the subtests which dealt with the assessment of aural perception within all six achievement tests proved not to have as high reliability indices as had been hoped. Reliability indices for the total test scores using the odd-even method of estimation ranged from .46 to .70 computed on randomly selected subgroups of students. The audio subtests were even lower, ranging from a low of .18 for the melody subtests to .42 for timbre subtests. Knowledge of form subtests ranged from .32 to .62. These values clearly show that the expected amount of variation generated by the tests' low internal consistency were an important factor because this source of error would reduce the sensitivity of the criteria for hypothesis testing. The expectation would be that treatment differences reflected in the total test scores and the knowledge of form subtest scores probably would be more frequently significant since the reliability indices of these were generally higher. This proved to be the case, as is noted in the next chapter of the report. The melody subtests were least reliable; no significant differences due to treatment were found using this subtest as a criterion for any of the comparisons. A more thorough discussion of this topic will be reported in the analysis chapter.

The Elementary Music Achievement Test. This instrument, which was administered at the beginning of the term, provided data which were used as a blocking variable in order to make the comparisons between treatments more powerful. Permission to modify the test was requested from the author because such modification would more nearly meet the needs of this study. The sections dealing with auditory-visual discrimination were omitted because skill in reading the score was not a vital aspect of the criteria used in this investigation.

The following sections of the EMAT were selected as being relevant as a pretest:

1. Pitch (two and three tone patterns)
2. Intervals (phrases)
3. Tonality (cadences and phrases)
4. Modality (chords and phrases)

The modified test comprised 77 items; a high score of 101 was possible, however, since some of the items required two and sometimes three separate discriminations to be made.

The EMAT was administered at the third meeting of the class. Students were not informed of the purpose for the test beyond a perfunctory explanation that the instrument was being administered to ascertain the general level of their achievement in aural perception. Raw scores were posted by test number so that a student could evaluate his score with respect to the class's mean. They were informed that these data would have no effect on their class standings; the instructors were not apprised of these data (as the investigator promised the subjects would be the case).

The Preference Inventory. To measure differences in preferences for absolute music compared to programmatic music, the students were asked to select one of two compositions in each of fifteen sets of paired comparisons based on the criterion of which of the two they liked better to listen. The pairings were composed of the first three symphonic movements which had been studied earlier in the semester (Haydn's 101st Symphony, fourth movement; Haydn's 94th Symphony, second movement; Mozart's 40th Symphony, first movement, and the three programmatic works assigned for study later in the term (Tschaikowsky's Romeo and Juliet; Smetana's Die Moldau and Rimsky-Korsakov's Scheherazade). These six works were arranged into the fifteen possible separate pairings and students were requested to make a choice of the one they preferred as listening fare in each case. The instrument as the students received it is reproduced in Appendix B (page 218).

In order to help recall for them any specific attitude concerning each of the works which they might have acquired as they had studied the compositions, the investigator prepared a short tape including the themes of each. This was played immediately prior to their filling in the preference forms. Furthermore, by means of this technique, it was hoped that choices would be based more on a "real" subjective reaction associated with the music instead of a snap judgement possibly resulting from irrelevant cues.

Two methods of scoring the forms were employed. The first method consisted of tabulating which composition was preferred in each of the fifteen pairs and entering the tallies in a table. When all tallies were placed on the proper cells, the frequency of tallies determined the ranking for any group of students or combination of groups (such as all experimental subjects vs. all the control subjects).

The second method was to assign a plus value of one point for each instance where the preferred choice was in the direction of the hypothesis, i.e., when an absolute composition over a programmatic composition was selected. If the student checked the programmatic composition, a negative value of one was tabulated. By this means, it was possible to obtain a single score for each student's set of comparisons. In the case of the experimental subjects only, this method of scoring yielded two scores; these students' preferences provided data to test both parts of the hypothesis (see the second hypothesis on page 7):

1. The first part of the hypothesis proposes that students who studied the symphonic movements by means of the programed analysis would "overcome" the oft-observed preference of non-music majors for programmatic music by demonstrating a greater frequency of preferences for absolute music. To test this, a plus value was tabulated in each comparison when the student selected the absolute music.

2. The second part of the hypothesis states that the experimental students would show a stronger preference for the compositions they had studied by means of the programed analysis. To test this, whenever a student selected the work he had studied by the programed analysis when that composition was one of the pairs, he was given a plus score. When his selection was opposite to the hypothesized direction, a negative value of one was assigned to the choice.

The rationale and assumptions underlying both aspects of the hypothesis are as follows:

1. To a degree, an individual's preferences for specific art objects are formed by his ability to sense the purpose or "meaning" of the art.

2. The person with a musically-untrained ear strives to find meaning in a composition through extra-musical factors and associations. These may be facts about the music, the composer, or as in programmatic music,

the program. An appreciation for music with which a person is unable to make definite extra-musical associations (such as in absolute music) must ultimately come primarily from his perception of its structure.

3. The programed analysis used in this study will teach the subjects to perceive the structural design of the musical art form programed.

These assumptions are not intended in any way to demean the value of programmatic music, of course. Neither are they intended to indicate a superiority of absolute music. Care was taken in this study not to imply a heirarchy of values; the compositions were referred to by name only (see Appendix B for preference form). Programmatic music which was assigned is from the standard repertory of Western masterpieces*.

The Questionnaire. No hypothesis had been stated concerning the attitude of the students to general or specific features of the experimental materials. However, as the study progressed, the author received several unsolicited evaluative comments from students from time to time and since these comments were often at variance one with another, it seemed advisable to make a systematic evaluation of these attitudes.

A form consisting of thirteen questions was constructed which gave the subjects an opportunity to react to specific aspects of the programed texts, the tape adjunct, the use of the orchestra score and the equipment. The students could complete the form by checking listed possible responses and/or respond to open-ended choices. Tabulation was done by a frequency count of checked responses to each item on the questionnaire and classifying the kinds of remarks made to the open-ended questions.

In order to avoid unnecessary bias in the responses, four precautions were taken: a) the questionnaire was mailed to the students rather than asking them to complete the forms in class; b) the questionnaire was mailed after the term had officially ended (in order not to create an impression that a favorable response was "diplomatic"); c) the student did not need to sign his name, unless he wanted to be identified as the author; d) the student returned the questionnaire by mail to the investigator.

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*1. Romeo and Juliet Overture(Tschaikowsky) performed by the New York Philharmonic Orchestra conducted by Bernstein on the Columbia label, 2. Scheherazade(Rimsky-Korsakov) performed by L'Orchestre de la Suisse Romande conducted by Ansermet on the London label, 3. Die Moldau (Smetana) performed by the Berlin Philharmonic Orchestra conducted by von Karajan on the Angel label.

The code number of each student was placed on the form before it was mailed to him. This was done for two reasons: first, in the event of non-response, the follow-up notices had to be sent; secondly, it would be of interest to note variances when replies were grouped according to blocks and treatment.

Follow-up notices were mailed only once; a one hundred per cent response was realized without difficulty. The questionnaire form and letter of transmittal are included in Appendix B (see page 219).

Controls

There was no attempt on the part of the investigator nor the three instructors to hide the fact from the students that a systematic evaluation of some kind was taking place. It was felt that students would perform more nearly as they would in a routine classroom situation if they were given enough information to maintain a semblance of their normal posture. In order to control for the Hawthorne effect during the experiment the students were told that an assessment of new materials was being made, with a particular emphasis on the tapes and tape transports. No mention was made at any time that the central purpose of the experiment was to assess the efficacy of programed instruction as a teaching tool in learning to listen to a complex art form.

The experimental materials were always referred to as "the tapes" or "the taped compositions" and the room in which the experimental group fulfilled their assignments was called the Tape Listening Room*. To be sure, some of the students were aware that they were reading a program because they had been exposed earlier to programed instruction in other disciplines. There was no reinforcement of these observations, however by the investigator or their professors.

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*The room in which the control groups prepared their assignments was called the Record Listening Room. Appropriate signs were made and attached to the walls near the entrances to both rooms.

The analytical design also provided a measure of control of the Hawthorne effect (see Figure 2 on page 34). Each of the comparisons used to test the hypotheses involved only students who at one time or another had had an opportunity to study by means of the experimental materials. These students, therefore, were at one time "experimental" subjects and at other times, "controls". Since the individuals were not apprised of the hypotheses under test, it would have been difficult for any one subgroup to know under which particular circumstance they were hypothesized to do better than another subgroup. This was particularly true of the comparisons made to test the latter three hypotheses (see the listing for hypotheses 1b, 1c and 1d).

Summary

This chapter has been devoted to a detailed explanation of the basic features of the procedure used in conducting the experiment itself. A complete description of the sample of subjects chosen to test the hypotheses has been made as well as an outline of the basis on which the experimental and control groups were selected. The differential treatment of experimental and control subgroups within each was presented together with a description of the experimental materials; the effectiveness of these instructional tools was the primary purpose of the study. An accounting of the experimental procedure used in this study and the time schedule of the major events in the experiment were made in the schematic showing the details of its different stages. The author has also given an explanation of the construction and use of the criteria developed for the experiment and finally, a description of the controls built into the design was made.

CHAPTER III

THE ANALYSIS AND FINDINGS

This section of the report will explain in detail the procedures followed to analyze the data obtained by the criteria described in the preceding chapter. The primary matter of concern, of course, was to discover if any significant differences occurred among groups in terms of achievement scores on the several subtests relating to aural perception. Tests of information obtained by the other data-gathering devices will also be of interest; however, these findings will be of secondary importance to the purpose of the study. Separate evaluations were made for each of the three sections enrolled in Mu 112; no attempt was made to group the classes for the significance tests.

Description of Classes: EMAT Scores

Table 2 shows the means, medians, and quartiles computed from scores obtained on the Elementary Music Achievement Test. It will be recalled that these data were used to block the students prior to their assignment to the subgroups. Because the design does not call for a comparison of the classes, no significance tests were made to discover differences among them. However, clearly there is little variation particularly among the measures of central tendency. The data are derived from total scores only; because the total test was used as a blocking variable, no useful purpose would have been served if subscores had been plotted.

Table 2

DESCRIPTION OF ALL CLASSES
BASED ON EMAT DATA

	Class		
Variable	I (N=124)	II (N=108)	III (N=107)
Mean	70.4	70.8	69.2
Median	70.5	72.0	69.0
Q_1	59.0	62.0	62.0
Q_3	79.5	82.0	80.0

Colwell has no norms for college students so that it is impossible to assess the relative standing of the entire sample on his aural skills subtests. However, the ceiling of his test which was modified for this investigation, was sufficiently high to measure every student*.

Analysis of Achievement Test Scores

It will be helpful if one would refer to the treatment schematic (see Figure 1) as the various comparisons are discussed. Figure 2 below lists all the comparisons which were made for each class. It will be remembered that each test, or observation, consists of five subtests as well as the total score. It was decided to test the significance of the total score for the purely "audio" portion of the test separately as well (the reason for this will be discussed later). Therefore, for each comparison, a significance test was made based on the scores for each of seven subtests. To test all four hypotheses (1a, 1b, 1c and 1d), 140 significance tests were run for each section, or a total of 420 for all three classes.

It is important to note that the experimental variable was operative outside the classroom so that the students were exposed individually to the materials; therefore, it was assumed that the learning of the students was independently achieved. Thus, within each class, the experimenter felt justified in considering the student rather than the entire class to be the experimental unit.

Scores obtained from the six achievement tests were used to test hypotheses 1a, 1b, 1c and 1d (see page 7). Hypothesis 1a is of central importance, of course, since the investigator is concerned whether or not an individual who studied the programed analysis of a particular composition earned a significantly higher score on the achievement test based on that composition than one who studied it conventionally.

Two types of comparisons for testing hypothesis 1a should be pointed out. Comparing subgroups R_b vs. R_a on O_3 (see comparison 4 in Figure 2) is a comparison - which is conveniently called "type 1" in Figure 2 - between a group which has studied one of the three compositions (composition 2) using the experimental materials and a group which did not use the analysis for that composition.

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*The highest raw score possible was 101. The top-scoring student in all three sections fell short of that by two points.

	Comparisons*	Observation	Relevant Hypothesis
1.	$(R_a+R_b+R_c)$ vs. $(R_d+R_e+R_f)$	O_1	1a (Type 2)
2.	$1/2\ (R_d+R_f)$ vs. R_e	O_2	1a (Type 2)
3.	R_a vs. $1/2\ (R_b+R_c)$	O_2	1a (Type 2)
4.	R_b vs. R_a	O_3	1a (Type 1)
5.	R_f vs. R_d	O_3	1a (Type 2)
6.	R_b vs. R_c	O_3	1a (Type 2)
7.	R_a vs. R_b	$O_{2'}$	1b
8.	R_b vs. R_a	$O_{3'}$	1b
9.	R_a vs. R_c	O_3	1c
10.	$1/2\ (R_a+R_b)$ vs. R_c	$O_{1'}$	1c
11.	R_f vs. R_d	$O_{1'}$	1c
12.	R_b vs. R_c	$O_{2'}$	1c
13.	R_f vs. R_d	$O_{2'}$	1c
14.	R_a vs. R_c	$O_{3'}$	1c
15.	R_c vs. R_d	O_3	1d
16.	R_b vs. R_f	O_3	1d
17.	R_a vs. R_f	$O_{2'}$	1d
18.	R_c vs. R_e	$O_{2'}$	1d
19.	R_b vs. R_f	$O_{3'}$	1d
20.	R_c vs. R_d	$O_{3'}$	1d

Figure 2

Comparisons Made to Test Hypotheses 1a, 1b, 1c, and 1d
(Subgroups Shown for Class I Only)

*The left term of each comparison
was hypothesized to be greater.

In addition, by the time O_3 is made, both R_a and R_b studied the same *number* of compositions (two) using experimental materials during the same interval of time in the semester and both had the *first* opportunity to study by means of programed analyses (for class I shown in Figure 2, E_1). Unfortunately, only one of this type of comparison is found in each of the three classes to test hypothesis 1a. However, the other five comparisons which test this hypothesis (shown as "type 2" comparisons in Figure 2) also answer the question whether the use of the programs made a difference with respect to the criteria. However, unlike the "type 1" comparisons in these situations it can't be determined whether *any* program would have been effective or whether it was the specific program itself.

Excluding group R_g, the comparisons to be made for testing hypotheses 1a, 1b, 1c and 1d are shown in Figure 2 for Class I. Analogous comparisons were made for Classes II and III except that the permutations of programs and observations differ as shown in the treatment schematic in Figure 1. The left side of each comparison in Figure 2 was hypothesized to be greater.

The experimental design is organized in such a way that all the comparisons listed in Figure 2 were made so that the variation due to the effects possible from conditions stated in *any or all of the other three hypotheses* can be discounted. For example, consider comparison 20: R_c vs. R_d on O_3'. Neither R_c nor R_d studied the sonata-allegro design (the sonata-allegro design is the design measured by O_3) using the experimental materials. Further, both R_c and R_d studied the same number (one) of compositions using the experimental materials. They *differ* only in the characteristic under investigation stated by hypothesis 1_d; namely, subgroups R_c had access to the programed material earlier in the term than R_d and is thus hypothesized to perform better on O_3'.

For each subtest of each achievement test, a two-way analysis of variance was made. Treatment (R_a, R_b, etc.) and score on the EMAT specified by block were the independent variables*.

The Test of Hypothesis 1a. Figure 2 shows that six comparisons (numbers 1 through 6) were made among certain subgroups to test the first hypothesis. The hypothesis states: all things being equal, a student's perceptive skills relating to the components of structure (form) in a musical work will be greater when the student studied the composition under examination using an adjunct linearly constructed program with inserted tape musical references. This is the central hypothesis of the study; if no differences could be found at this point, one could hardly expect differences to be discovered in the situations described by hypotheses 1b, 1c and 1d.

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*Since the variances due to the interaction of treatment and block were nonsignificant in all cases, the within cell and interaction mean squares were pooled for the purpose of testing the significance of the differences among treatment means.

Table 3

NUMBER OF SIGNIFICANT DIFFERENCES FOUND BY THE TESTS OF HYPOTHESIS 1a BETWEEN THE RELEVANT CONTROL AND EXPERIMENTAL SUBGROUPS GROUPED BY COMPARISON (ALL CLASSES)[f]

Comparison Number	Subtest						
	H&T[a]	K of F[b]	Mel[c]	Rhy[d]	Tim[e]	Total Score	TOTALS
1	1	3	0	0	0	2	6
2	2	2	0	2	0	2	8
3	0	2	0	1	0	1	4
4	1	2	0	0	1	2	6
5	1	1	0	1	0	2	6
6	0	2	0	0	0	1	3
TOTALS	5	12	0	4	1	10	33

[a] Harmony and Tonality, [b] Knowledge of Form, [c] Melody, [d] Rhythm, [e] Timbre.

[f] Maximum number of significant differences possible for each entry is 3 (comparison times number of sections). Thus, for the subtest Form in comparison 1, the differences were significant every time.

As will be noted later, the planned comparisons to test this hypothesis yielded more significant differences to substantiate it than for the other hypotheses. Comparisons for all subtests in all three classes showed 33 significant differences (at the 5 per cent level) in favor of the relevant experimental subgroups. In each of these 33 instances, the null hypothesis that the differences found between the experimental and control subgroups could have arisen due to chance factors was rejected.

The usefulness of the experimental design becomes apparent when the six different means of testing this single hypothesis are noted (please refer to Figures 1 and 2). Had the experiment been limited to a simple comparison of experimental versus control on one criterion using one programed analysis, conclusions concerning the hypothesis with these data would have to be approached with greater caution. However, as the summary of all comparisons for the test of hypothesis 1a in Table 3 shows, the significance test made for each subtest, with the exception of the melody subtest*, results in at least one significant difference in the hypothesized direction. Table 4 clearly establishes the fact that these results are found in all three classes (data from Class III are not nearly so clear-cut; a discussion of the reasons for this difference will be made later in this section). The data in Table 3 show also that each of the six methods (or comparisons) of testing the hypothesis yields similar results**. Finally, the achievement tests built on each of the three compositions which were programed all resulted in some significant differences between the relevant experimental subgroups and relevant control subgroups; these data are listed in Table 5. The raw score values expressed in means are included in Tables 15, 19, 23, 27, 31, 35 and 39 (see Appendix A) grouped by subtest.

The investigator feels that the frequency of significant differences found in favor of the experimental subgroups provides sufficient experimental evidence to support the validity of hypothesis 1a. This is particularly true with respect to the following subtests: a) Harmony and Tonality, b) Knowledge of Form, c) Rhythm, and d) the total test. No conclusions can be drawn concerning the perception of melody and timbre.

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*The melody subtests in all of the six achievement tests were the only subtests which consistently showed no significant differences between relevant subgroups for all four hypotheses. One of the main reasons for this phenomenon probably is that the melody subtests had extremely low reliability indices (see previous section).

**The tables summarizing the tests of hypotheses 1a, 1b, 1c, and 1d do not include references to comparisons on the "audio" portion of the test scores. Although the audio scores were used in testing the hypotheses, they were not an integral part of the original design. References are made to the audio score in the text of the report and means for all subgroups on the audio portion of all six tests are included in Appendix A.

Table 4

NUMBER OF SIGNIFICANT DIFFERENCES FOUND BY THE TESTS OF HYPOTHESIS 1a BETWEEN THE RELEVANT CONTROL AND EXPERIMENTAL SUBGROUPS GROUPED BY CLASS (ALL CLASSES)

	Subtest						
Class*	H&T	K of F	Mel	Rhy	Tim	Total Score	TOTALS
I	3	4	0	3	0	4	15
II	1	5	0	1	1	5	13
III	1	3	0	0	0	1	5
TOTALS	5	12	0	4	1	10	33

*6 comparisons for each class

Table 5

NUMBER OF SIGNIFICANT DIFFERENCES FOUND BY THE TESTS OF HYPOTHESIS 1a BETWEEN THE RELEVANT CONTROL AND EXPERIMENTAL SUBGROUPS GROUPED BY COMPOSITION STUDIED (ALL CLASSES)

	Subtest						
Composition*	H&T	K of F	Mel	Rhy	Tim	Total Score	TOTALS
Haydn's 101st (rondo)	0	6	0	0	1	5	12
Haydn's 94th (variations)	1	2	0	2	0	2	7
Mozart's 40th (sonata)	4	4	0	2	0	3	14
TOTALS	5	12	0	4	1	10	33

*6 comparisons made for each composition

Tables 15, 19, 23, 27, 31, 35 and 39 in Appendix A show that the means differed between the relevant experimental and control groups in the expected direction in 96 of the 126 possible comparisons. The number of times that the means of the experimental groups exceeded the means of the general control groups was 103 of the 126 comparisons.

Some relevant observations should be made in view of the inconsistency of some of the findings. It is clear that the low reliability of the criterion measure - particularly so of the audio subtests - contributed to these circumstances. That is, the amount of error due to the low internal consistency of the subtests probably was a major factor in many instances where expected significant differences did not materialize.

It seems noteworthy to comment on probable reasons for the low reliability of the audio subtests*. First, a sampling of ten items of aural skills (which have been observed by other researchers to be difficult to measure accurately) was apparently too small. An attempt to discover the optimum number of these particular kinds of samplings necessary in order to attain a desired level of reliability would be the subject for an interesting study.

Second, measuring an individual's perception of sounds as these occur within the musical work has been observed by music educators to be an inherently difficult procedure. It is easier to measure differences of aural acuity relating to a sound without reference to the time base upon which sounds are modulated for "meaning". For example, requiring the perception of the difference between two sounds of isolated pitches or rhythm patterns is an easier task to measure reliably than to assess similar skills of an individual when the same sounds are fitted within the context of an art form. Even a very short lapse of one's attention may result in a degree of loss unrelated to his true ability; once the sound has passed, it is irretrievable. This is entirely unlike a printed symbol to which one can return again and again for the cue.

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*Early trials and expectations led the author to anticipate that the indices might not be very high because of the restrictions noted in the previous chapter. While it is likely that the experimental situation itself generated some of the undesirable variation however, the tests were expected to function more efficiently than was the case.

Third, the response being measured nearly always relates to a single dimension of a sound which normally is nested within a complex of other sounds. It is reasonable to expect that an individual's attention could be attracted to the other "misleading" or "irrelevant" cues. It is also possible that these contiguous sounds may even obliterate (for him) the cue to which the test statement makes reference. Responses of this kind, which are the result of intricate interaction of cues with the subject, probably are the largest single source of error in measurements of listening ability.

Attention should also be called in this discussion to the knowledge of form subtest. Since this subtest consists primarily of items which deal more often with reasoning power (rather than aural perception) of the student, it is interesting to note that significant differences in the hypothesized direction are noted more frequently than in the other subtests. Tables 3, 4, and 5 show that in one comparison the relevant experimental subgroups in all classes were significantly better than the corresponding relevant control subgroups. In four of the five remaining comparisons, note that two-thirds of the time the differences were also statistically significant in favor of the relevant experimental subgroups. Either the programed material was effective in teaching these particular skills more so than the other skills or (which seems more likely) the error in this subtest resulting from inconsistencies of measurement was lower and thus revealed differences more readily.

The "audio score" was derived by totaling the responses of students to items relating to aural perception only, and was computed simply by subtracting the knowledge of form score from the total score. This was done in an attempt to discover whether or not differences would be noted between relevant subgroups on that part of each test eliciting responses to aural stimuli only. Unfortunately, the significance tests do not justify a firm conclusion one way or the other even though the means for the relevant experimental subgroups were greater in every case than for the relevant control groups in Classes I and II (one difference was significantly different in the hypothesized direction). In Class III, this difference was not so clearly defined; in only three of the six comparisons, the differences were in the hypothesized direction. A likely conclusion from this finding is that the knowledge of form subtest is the main contributor to the reliability of the total test.

The findings for Class III, which are most clearly seen in Table 4, are puzzling in view of the fact that the data obtained in the other two classes do not vary to such a great extent. This difference is seen most markedly in the number of significant differences between relevant subgroups for total scores (see Table 4). The writer has attempted to make inferences concerning possible causes for this phenomenon. Since there was no control exerted over such factors as selection of the class sample, the course outline used, textbooks, hour of meeting, instructor, selection of learning experiences in class, one may conclude that some variation could have been generated from any or all such sources.

Of variables which might have contributed most to the divergence observed in Class III the following differences seem to the investigator the most likely causes:

1. The instructor of Class III was concerned with the amount of time taken from his class for gathering data to test the effects of the experimental data so that he required all his students to attend an extra "listening-discussion" hour every week to compensate for this loss of time. It is important to note that the other instructors did not make such a change in their class schedules. In several discussions with this instructor, the researcher learned that the main objectives of the extra required class hour were to teach the students to listen more intelligently and to learn to make increasingly find discrimination among sounds. The instructor of Class III reported that the extra listening session was, in his opinion, very effective.

2. Students in Class III were required to demonstrate their progress during the semester by means of six achievement examinations, each one of which was primarily a listening test. Not only was each of these a learning experience, but close observation by the investigator in the listening room revealed a much greater amount of activity by students in Class III than in the other sections (which is to be expected, of course). In comparison, students in Classes I and II were required to take only two achievement tests during the semester. Thus, Class III had three times as many learning experiences through preparation for their tests as well as during the testing periods themselves.

3. The instructor of Class III also used the "experimental" composition* which was under test for hypothesis

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*The first movement of Mozart's 40th Symphony.

1a in his section as an example of sonata form. For this purpose, he charted the entire movement, and duplicated and distributed the chart for students in his class*.

The points above are made simply to explain why results between Class III and the other classes differed so markedly. Clearly the data had become contaminated and the author cites the three items listed above to be the primary causes.

Finally, the author made a simple count of the number of times that the means of the experimental subgroups in each class exceeded the means of the relevant control and general control subgroups**. Of the 84 comparisons made for the test of hypothesis 1a in classes I and II only, the experimental subgroups' means were larger than the relevant control subgroups' means in 72 cases. Again in classes I and II only, the experimental subgroups' means exceeded the general control groups' means in 83 of the 84 comparisons. When Class III is included, these high proportions drop somewhat, of course. However, the figures are still impressive: the experimental subgroups' means are greater than the relevant control subgroups' means in 96 of the 126 comparisons and in 103 of the 126 comparisons made between the experimental subgroups and the general control subgroups.

To summarize, in view of the difficulties encountered by the problems of measuring the criterion behavior accurately, and the atypical activity of Class III, the frequency of significant differences found by testing hypothesis 1a seems to justify the conclusion that the experimental treatment was effective. In other words, it does appear that the individuals who studied the compositions by means of the programed analyses did significantly better than students who studied the same compositions with conventional materials and equipment on the basis of the criteria.

The Test of Hypothesis 1b. The rationale which underlies the basis for hypothesis 1b is that it would be reasonable to expect students to transfer more perceptive skill to a composition not studied which is in the *same design* as one *studied* by a programed analysis than a student who had also studied, equally early in the semester, a composition by a program but not in the same form. In other words, the test here is to determine the effect of an individual's familiarity with a composition's basic design on the amount of aural transfer. Again, the usefulness of the experimental design is readily apparent: not only can the transfer power *per se* of the programs' teaching be assessed, but it permits an inference concerning the effect of a musical factor (in this case, form) upon the outcome.

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*This was done, unfortunately, in spite of the fact that the researcher had specifically requested that the six compositions used in the experiment not be used in the classroom nor for outside preparation.

**Recall that students in the "general control" subgroups were never exposed to the experimental materials. On the other hand, students in the "relevant control" subgroups did have access to the programed analyses. The latter groups are "controls" only in the sense that, in specific comparisons, particular variables (as described by each of the four hypotheses) were held constant by means of these subgroups.

Only two comparisons within any given class could be made to test this hypothesis and still control the other factors under consideration. Taking comparison 7 in Class I as the example (see Figures 1 and 2), Ra vs. R_b on O_2' is an opportunity to study the effect of the situation hypothesized, for both subgroups are no different in other respects: a) both subgroups had the first opportunity to study a program in the term, b) both subgroups studied the same number of programs (two). The same situation holds true for the eighth comparison, R_b vs. R_a, except that now the test must be O_3'. The same kinds of comparisons were possible in each of the other two sections, but of course, the observations (tests) are different in each case because the order of observations was different (see Figure 1).

None of the fourteen subtest-comparisons in Class I yielded significant differences, and only two in each of the other classes were significantly different in favor of the relevant experimental subgroups. Table 6 summarizes these data.

Since such a small proportion of the comparisons produced significant differences, one would hardly expect to find any patterns from which one could draw conclusions concerning the hypothesis. Because only four of the 42 comparisons tested were significantly different, it is probably safe to fail to reject the null hypothesis that differences were due to chance.

Again it appears that the central problem is the low reliability of the subtests. An examination of the raw data in Tables 16, 20, 24, 28, 32, 36 and 40 (Appendix A) shows that in 28 of the 42 comparisons the mean values of the relevant experimental subgroups were in the hypothesized direction when compared to the relevant control subgroups. In comparing the experimental subgroups to the *general* control subgroups, 35 of the 42 differences between the means were in the hypothesized direction. Therefore, it is tempting to suggest that, with more reliable tests, statistically significant differences might have been noticed more frequently*.

Table 6

SPECIFIC SUBTEST-COMPARISONS YIELDING SIGNIFICANT DIFFERENCES TO SUPPORT HYPOTHESIS 1b

Class	Comparison	Subtest	Composition
II	8	Knowledge of Form	Haydn's 100th
II	8	Timbre	Haydn's 100th
III	8	Harmony & Tonality	Beethoven's 5th
III	7	Total Test	Haydn's 100th

The Test of Hypothesis 1c. The purpose of this evaluation is to measure the effectiveness of the programed analyses with respect to the number of programs studied. It seems likely that students who were randomly selected to study two compositions by means of the experimental materials would profit more from them than students who had read only one.

Note that the hypothesis makes no statement concerning the value of a specific combination of analyses - three are possible in this investigation (1. rondo and variations, 2. rondo and sonata, 3. variations and sonata). Nor is evidence sought in order to make possible inferences regarding the way in which these analyses might interact. For example, one could hypothesize that the programs are simply additive in their impact. Another possible view is that studying a programed analysis of two different forms is better than studying programs of two different compositions in the same design. The experimental design in this study is structured so that only a simple answer to evaluate the effect of number of programs on the criteria can be made. A quick glance at Figures 1 and 2 reveals that the test is simply comparing subgroups of individuals who have studied two with those who have studied one.

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*It is also interesting to note that in 5 of the 6 possible comparisons the relevant experiment subgroups obtained higher mean scores on the audio portion of the test than either the relevant control or general control subgroups.

All the specific subtest-comparisons which were significantly different in the hypothesized direction are listed in Table 7. Since there are six separate scores (five subtests plus total test) for each of the three classes and for each of the six comparisons which were possible to run to test hypothesis 1c, 108 specific subtest-comparisons were made. In only ten of these instances were the means of the relevant experimental subgroups significantly larger than the relevant control subgroups (see Table 7).

Table 7

SPECIFIC SUBTEST-COMPARISONS YIELDING SIGNIFICANT DIFFERENCES TO SUPPORT HYPOTHESIS 1c

Class	Comparison	Subtest	Composition
II	9	Knowledge of Form	Haydn's 101st
III	10	Rhythm	Beethoven's Eighth
I	11	Rhythm	Haydn's 100th
III	11	Rhythm	Beethoven's Eighth
II	12	Knowledge of Form	Beethoven's Eighth
II	12	Timbre	Beethoven's Eighth
II	12	Total Test	Beethoven's Eighth
III	13	Harmony & Tonality	Haydn's 100th
III	14	Timbre	Beethoven's Fifth
III	14	Total Test	Beethoven's Fifth

The investigator feels that the acceptance or rejection of hypothesis 1c is impossible based on these data. Had the measuring tools been somewhat more reliable (or to put it another way, had it been possible to remove some of the restrictions imposed on the testing procedure), a more definite conclusion might have been reached. On the other hand, it is of interest to note that the audio subtests listed in Table 7 are more numerous than the total tests or knowledge of form subtests. (It will be recalled that this was not the case in the data used to test hypothesis 1a.) Furthermore, nearly all the compositions upon which the achievement tests were constructed to test the validity of the hypothesis are works which the students had not studied beforehand. In other words, since improvement in the audio subtests were noted more frequently this should encourage the educator to think that auto-instruction could prove to be a potent factor in the longitudinal development of listening skills.

The means of the relevant experimental subgroups exceeded the means of the relevant control subgroups in only 47 of the 126 comparisons. However, the experimental subgroups' means surpassed those of the general control subgroups in 100 of the 126 cases*. Hence, while the latter finding does give additional support to the view that programed analyses are generally superior to conventional materials and procedures in improving aural perception, the former proportion does not help to establish the validity of hypothesis 1c one way or the other.

The Test of Hypothesis 1d. It is of value, in the assessment of a teaching tool, to discover if the introduction of such a device at a particular time in a course of study has any bearing on its effectiveness. Of course, the experimental design here is so arranged that the test of the hypothesis is limited to an evaluation of relative placement of the programed analyses in the school term. This is desirable, since one would obviously expect that the many variables operating in any specific course of study will interact uniquely with any kind of teaching procedure introduced, so that a general conclusion as to relative placement has the most value for educators.

Within each of the three sections involved in this study, six comparisons between subgroups were possible to be made to gauge the effect of the "time placement" variable. Note again (refer to Figures 1 and 2) that placement in the semester is the only main effect which differs between the two subgroups in each of the six comparisons. That is, the effects of numbers of programs studied and the particular forms studied (i.e., rondo, sonata-allegro, variations) are equated for each subgroup in all six comparisons.

Note that comparisons 15 and 16, however, are made using compositions which had been studied by both subgroups (albeit by the conventional or "control" procedures) while the remaining four comparisons - 17 through 20 - have as the criteria the follow-up compositions which neither subgroup had had the opportunity to audit before the tests. One might expect that results among the comparisons could vary on the basis of this difference.

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*For the audio score alone, none of the comparisons was significant. However, the relevant experimental subgroup means were greater than the means of the general control group means in 14 of the 18 possible comparisons on the basis of the audio score.

Table 8 shows the six instances where significant differences between the experimental and control subgroups were found in the hypothesized direction for all six comparisons and all three classes. Again, recall that the total number of comparisons by subtests for all classes was 126 (7 subtest scores x 6 comparisons x 3 classes). Thus, the number of significant differences is actually very small compared to the total possible.

No pattern appears in the tabled comparisons which might lead one to draw inferences concerning the value of specific time arrangements nor the kind of criteria used to make the test. Note, however, that real differences appear equally often for audio subtests as total test and knowledge of form scores, which provides some evidence (although scanty) that individuals can improve their aural skills by this means of self-directed study*. The evidence to support or refute the hypothesis that the programs are more valuable if introduced earlier in the term is, unfortunately, too tenuous to justify a conclusion one way or the other.

Table 9 gives the scores obtained by the subjects on the six achievement tests shown as grand means for all three classes combined. The purpose of this table is to provide a reference in the form of a summary of the raw data**.

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*It should be noted that while the number of times that the means of the relevant experimental subgroups exceeded those of the relevant control subgroups on the test of hypothesis 1d in 67 of the 126 comparisons, the experimental group means were higher than the general control subgroups a much larger proportion of the time: in 94 of the 126 comparisons. Also, on the audio portion of the scores, the experimental subgroups were better than the general control groups (in the hypothesized direction) in 13 of the 18 comparisons.

**For the means obtained in every subgroup of each class on all subtests, however, the reader should examine Tables 15 through 42 in Appendix A. The mean values presented in these 28 tables, of course, have been the basis for the tests of significance.

Table 8

SPECIFIC SUBTEST-COMPARISONS YIELDING SIGNIFICANT DIFFERENCES TO SUPPORT HYPOTHESIS 1d

Class	Comparison	Subtest	Composition
III	15	Rhythm	Haydn's 94th
III	16	Knowledge of Form	Haydn's 94th
III	17	Total Test	Haydn's 100th
I	19	Harmony & Tonality	Beethoven's Eighth
III	19	Total Test	Beethoven's Fifth
II	20	Rhythm	Haydn's 100th

Of particular interest is a comparison of the magnitude of the values for each of the three groupings of students. Note that the grand means for the general control subgroup are less than either the relevant experimental or relevant control subgroups in every case. It seems appropriate to repeat that the general control group never had the opportunity to study the experimental materials; therefore scores of these students were not used in the tests of the hypotheses even though these data do provide a useful reference. An examination of the schematic of Figure 1 quickly reveals that control over variables which was possible by comparisons between the relevant experimental and control subgroups was not present in most of the comparisons between the experimental subgroups and the general control subgroups*.

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*The only situations in which the general control subgroup data (for example, those of R_g in Class I) could have been used properly to test a hypothesis were in comparisons 1 and 2. In the other cases, the variables described by the hypotheses could not be controlled, so that conclusions concerning the difference in treatment would not be valid.

Table 9

GRAND MEANS OF ALL OBSERVATIONS FOR TESTS OF EACH HYPOTHESIS COLLAPSING THE THREE CLASSES

Subtest	Grand Means		
	Relevant Exp. Subgroup	Relevant Control Subgroup	General Control
		Hypothesis 1a	
Harm. & Ton.	35.9	34.7	33.1
K. of Form	36.7	32.6	31.1
Melody	38.5	36.6	36.3
Rhythm	37.9	37.1	35.0
Timbre	36.7	36.0	34.6
Total	185.8	178.4	170.2
Audio	149.1	145.9	139.1
		Hypothesis 1b	
Harm. & Ton.	35.7	35.0	33.8
K. of Form	34.3	32.9	29.5
Melody	35.1	34.4	33.4
Rhythm	35.1	35.9	33.5
Timbre	36.5	35.4	34.0
Total	176.6	173.6	164.2
Audio	142.3	140.7	134.7
		Hypothesis 1c	
Harm. & Ton.	35.2	35.8	33.7
K. of Form	32.9	32.1	29.5
Melody	35.3	35.2	33.8
Rhythm	35.5	35.1	33.5
Timbre	34.8	35.5	33.5
Total	173.7	174.2	164.1
Audio	140.8	142.1	134.5
		Hypothesis 1d	
Harm. & Ton.	36.0	35.8	34.1
K. of Form	32.8	32.6	29.9
Melody	35.6	36.1	34.5
Rhythm	35.9	35.3	34.1
Timbre	35.9	35.5	34.3
Total	176.3	175.4	166.4
Audio	143.9	143.4	136.9

Comparisons with General Control Groups. It seems important at this point to call attention to two facts concerning the relationship of the experimental subgroups to the general control groups which should be kept in mind as one evaluates all comparisons made between them: 1) the general control groups and the experimental subgroups had the same initial ability in aural skills at the time the experiment began, and 2) the students in the general control groups never had access to the experimental materials.

Hence, while comparisons between the experimental subgroups and the general control groups cannot be used to determine the importance of the four factors articulated in hypotheses 1a, 1b, 1c and 1d such comparisons do give a measure of the effectiveness of studying the programed analyses. In other words, these comparisons reflect the total impact that the programed analyses have on students' aural skills relating to audition of musical works but do not separate out the relative importance of the influences spelled out in the hypotheses.

Time Scores. A careful record was made of the amount of time - expressed in minutes - which each student spent listening to each of the three compositions. Student supervisors in charge of both the Record Listening Room and the Tape Listening Room collected time sheets from each student as he left the area. As has been noted in Chapter 2, this was possible since both listening rooms during the experiment were constantly under supervision. While no hypothesis was advanced concerning the relationship of time spent listening to each composition and the earned achievement score, the author felt it to be important to gather such data in the event that a relationship could be established.

Correlations were computed between the students' "time scores" (i.e., total time in minutes which a given subject spent in studying the composition) and achievement scores. A sample of experimental and control subgroups provided data for this part of the study. The highest correlation obtained was -.14; the lowest coefficient was +.04.

There was a considerable spread among students' time scores, as might be expected. Students in the groups assigned to the programs in most cases recorded a longer period of time studying than those who used the conventional materials*. It is of particular interest to observe that subjects assigned to the programed analyses recorded a larger variation in time scores than those students who studied disk recordings and the conventional reference books*. One would naturally anticipate that studying detailed programed analyses would, for college students, consume approximately similar amounts of time. On the other hand, when materials are provided which allow for the maximum leeway of usage, the expectation is that the amount of time spent studying these references would vary a great deal more than for programed materials. Speculation concerning the cause for this phenomenon will be made in the last chapter of the report.

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*As an example, one "experimental" student studied the program built on Haydn's 94th Symphony for nearly 20 hours. Another individual in the same block and class but in another experimental subgroup recorded only two hours and fifteen minutes.

Of immediate concern to the investigator, of course, was whether or not time spent listening to the assigned works was a main source of variation in the students' achievement scores. Of particular interest was to determine whether or not observed differences in scores favoring the experimental subgroups could be attributed in large degree to the time these students spent at each assignment. This is especially true with respect to hypothesis 1a.

The lack of correspondence as seen by the low correlations between time and achievement scores was interpreted by the author to support the point of view that time per se did not contribute significant weight to test scores. In other words, it is doubtful, had it been possible to control for study time, that the results would have been modified to any significant degree. Admittedly, this conclusion must be considered to be tentative since there was no way to determine in this experiment the effect of time on scores.

On the other hand, if it were possible to establish that an increase in study time by either method of study would inevitably lead to a significant increase in achievement, it would seem logical to seek ways and means to encourage students to listen longer. Thus, if the programs succeeded in accomplishing this state of affairs, certainly one would have to conclude that the programs are desirable from this point of view alone.

Table 10 shows the means in minutes spent by students in the three subgroups for each of the three assignments. This table clearly reveals the decrease in numbers of minutes spent at listening as the semester proceeded. It would have been desirable, with respect to

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*However, it was not uncommon among students listening to disk recordings in the general control groups to spend two to three hours of listening time for the assigned movement. One student in a control subgroup reported listening to the first movement of Mozart's 40th Symphony a total of 5 1/2 hours. The investigator interviewed the student (ostensibly for another purpose) to verify his report and was subsequently satisfied that the student had indeed used the stated amount of time in serious study.

Table 10

MEAN TIME SPENT BY ALL STUDENTS IN PREPARATION FOR ACHIEVEMENT TESTS

Class	Time Scores[a]								
	First Assignment[b]			Second Assignment			Third Assignment		
	E[c]	C[d]	GC[e]	E	C	GC	E	C	GC
I	240	55	44	179	37	38	142	43	32
II	286	74	57	193	61	54	178	62	45
III	224	96	85	207	87	79	174	75	60

[a] Expressed in minutes.

[b] The assignments were different for each class. See Figure 1 for specific compositions.

[c] Relevant experimental subgroups.

[d] Relevant control subgroups.

[e] General control group.

the goals of the study, had it been possible to require like periods of time to be spent at each assignment, of course. No attempt was made by the investigator to urge students to spend specified amounts of time at their study since it was felt that such a procedure would affect the results of the study in an indeterminate way. It is quite likely, moreover, that the observed study patterns are not at all uncommon; results based on a controlled pattern of study time therefore, might not have as wide a generalizability as one which is uncontrolled.

The Analysis of Preferences

It has been hypothesized (see hypothesis 2) that students who have studied the listed compositions by means of the programed analyses would exhibit a different pattern of preferences for certain types of works as well as for particular compositions. Specifically, hypothesis 2 states that students in all the experimental subgroups will a) prefer absolute music more frequently than the control group and b) prefer those specific compositions they studied by the programed analyses more frequently than the compositions which they studied by conventional means.

As explained in Chapter 2, the preference rankings (high = 1, low = 6) of the three programmatic compositions were obtained by tabulating the results of each of the fifteen possible paired comparisons (6x5/2=15). In other words, the frequency of choices of each pairing determined the ranks.

Table 11 shows the preference ranking of three musical art forms for all three classes. Note that there is no difference among the classes; the rankings consistently show that the absolute compositions are ranked below the programmatic works although there is some variation within the broad categories of absolute and programmatic. It is of considerable interest to note that Haydn's 94th Symphony, which has always been thought to be one of the perennial favorites of young people, occupies the low rank in each class. (It was discovered that this composition was assigned the same rank regardless of how the students were grouped.)

Tables were constructed to reveal possible variations in these rankings not only by class but also on the two dependent variables: block and treatment. These tables are included in Appendix A; they clearly establish that these dimensions have little effect on the students' preferences, although some spotty minor fluctuations can be seen.

A more precise method of determining the preferences was also made by assigning signed values to the choices in each comparison (fully explained in Chapter 2). Each preference for one of the absolute compositions in the pair was assigned a value of plus one (+1) and for the programmatic, a negative one (-1). Because six of the pairings involved like kinds of compositions, (either both programmatic or both absolute) the highest positive - or negative - score which could be obtained by this method was 9. Means were computed for the experimental subgroups and compared with the means for the general control group (the latter students had studied no programs). As can be seen in Table 12, there is very little difference among them; all are negative values, which indicate that the direction of their preferences is toward the programmatic music.

Table 11

PREFERENCE RANKINGS OF PROGRAMMATIC AND
ABSOLUTE COMPOSITIONS OF STUDENTS
GROUPED BY CLASS

	Ranking		
Composition	Class I	Class II	Class III
Scheherazade[a]	1	3	1
Romeo & Juliet[a]	3	1	3
Die Moldau[a]	2	2	2
Mozart's 40th[b]	5	4	4
Haydn's 101st[b]	4	5	5
Haydn's 94th[b]	6	6	6

[a] programmatic [b] absolute

Because these data clearly demonstrated the nearly identical preferences of the groups and classes regardless of treatment, it was decided that significance tests were meaningless. In short, these data refute the hypothesis that the experimental treatment would modify preference of students for absolute music.

In comparing those students who had access to the experimental materials for two of the three absolute compositions with those who had studied only one, the same kinds of scores emerge. The data showing these comparisons are listed in Table 13.

Table 12

MEAN SCORES OF EXPERIMENTAL AND CONTROL GROUPS EXPRESSING PREFERENCE FOR PROGRAMMATIC VERSUS ABSOLUTE COMPOSITIONS[a]

Class	General Control Group	Experimental Subgroups
I	-5.31	-4.75
II	-4.74	-5.20
III	-5.48	-4.78

[a] negative scores indicate preference for program music compared to absolute music.

Table 13

MEAN SCORES SHOWING DIRECTION OF PREFERENCES FOR ABSOLUTE VERSUS PROGRAMMATIC COMPOSITIONS OF EXPERIMENTAL STUDENTS GROUPED BY NUMBER OF PROGRAMS STUDIED[a]

Class	Studied One Program	Studied Two Programs
I	-4.7	-4.8
II	-4.8	-5.6
III	-5.0	-4.6

[a] negative scores indicate preference for program music compared to absolute music.

The data in Table 13 reject the notion that more exposure to the analytical programs would effect a modification of preferences in the direction of the absolute music; there is no pattern to substantiate any conclusion except that the treatment difference made no impact on preferences for this sample of students.

The test of the second part of hypothesis 2 necessitated a separate procedure. This step had nothing to do with a student's preferences for absolute versus programmatic music but rather with his preferences for the composition(s) he had studied by the programed analyses. In order to quantify these preferences, when the student selected the composition he had studied by the programed analysis as his choice, he was given a +1. When a student selected a composition he had studied in the conventional way, a -1 was the score for that choice. Of course, this procedure of quantifying his preferences was followed only in the pairings in which at least one of the absolute composition(s) occurred.

A small modification was necessary in scoring because all experimental students either had studied one composition using the experimental materials and two with the conventional materials, or the opposite combination. The scoring procedure used for those students who had studied two compositions using the experimental materials was equated with that used for students who had studied only one by doubling that part of the score obtained from choices relating to the single composition. This was a step made necessary in order to cancel the spurious effect of larger negative or positive scores which might simply be a reflection of unequal numbers of programs studied. In short, had all students been exposed to a like number of programs, this would not be a factor to consider. The system of scoring described above yielded a maximum possible score (negative or positive) of 9 in both situations.

Table 14

MEAN SCORES SHOWING DIRECTION OF PREFERENCES OF EXPERIMENTAL STUDENTS FOR ABSOLUTE COMPOSITIONS STUDIED WITH EXPERIMENTAL MATERIALS VERSUS THOSE STUDIED WITH CONVENTIONAL MATERIALS[a]

Number of Compositions Studied with Experimental Materials	Class I	Class II	Class III
1	-0.2	-1.2	-0.9
2	0.0	-1.8	-0.8

[a] negative scores indicate preference for program music compared to absolute music.

Table 14 reveals that the second part of hypothesis 2 likewise is not supported by the data collected. The tabled values hover close to zero which can only be interpreted to mean the the relationship between the two methods (experimental and control) of studying the works had no or little effect on the experimental subgroups' preferences. An examination of individual scores reveals some spotty variation but the lack of patterns discouraged the investigator from proceeding with further analyses. No relationships emerged between scores and such dependent variables as the specific treatment (see Figure 1), the compositions studied, nor the time of the semester when the programs were presented. Detailed tabled values observed of the experimental subgroups of students grouped by treatments and blocks are included in Appendix A (see Tables 49 and 50).

One must conclude from the data obtained by the preference rankings that choices for particular compositions by the subjects in this study were singularly unaffected by the experimental materials. Since it has been observed in the test of hypothesis 1a that the subjects who studied using the programed analyses performed significantly better than individuals who prepared themselves by using the conventional materials, increased perceptions thereby achieved cannot be functionally related to preferences. The fact that this lack of correspondence was consistently demonstrated using two separate criteria reinforces the conclusion.

The Results of the Questionnaire

It will be recalled that no hypothesis had been advanced prior to the beginning of the study concerning students' attitudes toward the experimental materials. When the experiment was in its late stages, it became apparent that casually observed variation in the subjects' affective responses indicated that a systematic evaluation would prove to be interesting and valuable. Of particular significance would be the students' point of view regarding the effectiveness of the programed analyses as teaching devices. The procedure followed in collecting these data is outlined in the previous chapter; a copy of the questionnaire is included in Appendix B. Conclusions are based on a one hundred per cent response.

Most of the students apparently were serious about the opportunity they had to express themselves about their experiences; the author interpreted the high incidence of commentary on the forms as an indication of their desire to be as accurate as possible.

The investigator followed up the questionnaires by interviews with a small sample of students to test the validity of the form; this check satisfied him that the questionnaire performed adequately as intended. Below is a summary of the findings based on the tabulated responses; response frequencies are included in thirteen tables in Appendix A (see Tables 51 to 63).

1. An argument sometimes made by educators against the use of tapes and tape decks is that such facilities are difficult to use in comparison to disk recordings and turntables. The data in Table 51 (Appendix A) do not support this point of view. Although one-fourth of the students did feel that using records was less difficult, an equal-sized proportion felt it was easier to use tapes and tape machinery. The largest number of subjects - 50 per cent - agreed that the tape adjunct was no more difficult to manipulate than the conventional record-and-turntable facility.

2. Table 52 in Appendix A shows that a large portion - 87 per cent - of the 179 students who were exposed to the experimental materials felt that the programs were helpful to them in learning to listen to the composition(s). Furthermore, only three per cent felt they could have learned more had they used conventional recordings. The author thought it to be unnecessary to make an attempt at scaling affirmative replies to the question (see question 2 of the questionnaire in Appendix B); precision did not seem to be important here in light of the fact that scores on the achievement tests are the main criteria. The investigator interpreted the heavy affirmative response to mean that the students had confidence in the programs as teaching devices in learning to hear specific musical sounds.

3. A common problem with beginners is that they fail to comprehend the significance of verbal symbols used in music. Many expressive terms and the contexts in which they are used to convey meaning are borrowed from other disciplines or analogous situations. Without an adequate background of associations and experiences upon which to draw, verbal expressions as they relate to the musical sounds are often devoid of meaning for the individual. The students in this study apparently felt they were helped significantly by the programed analyses, for ninety per cent selected the affirmative response to the query concerning the teaching effectiveness of the materials in this regard (see Table 53 in Appendix A). Even though the main objective of the programs is to develop aural perception, an understanding of verbal "pointers" used to describe the sounds apparently is also a valuable experience to the learners.

4. The investigator is aware that many students prepare listening assignments in a seemingly casual manner even though they know they are to be tested. (The reason for this behavior is generally thought to be that beginning students of music simply do not know how to study a composition.) Therefore, he was not unprepared for comments of dismay at the amount of time they found it necessary to spend in reading the programs. The crucial point, however, is: was the time spent worth it in terms of results? The data in Table 54 (Appendix A) show that 48 per cent thought it probably was and another 27 per cent were sure of it. Therefore, three-fourths of the group agreed that benefit gained from the materials merited the time spent obtaining it.

5. It has been pointed out in the preceding chapter that most of the frames alluding to the actual sounds of the composition include line score notation of the specific thread of sound being discussed. The purpose of the tape adjunct, of course, is to reduce the necessity for music symbols in making references to the structure of the work, and instead, to place primary emphasis on audio cues for understanding. Nonetheless, as seen in Table 55 (Appendix A), over eighty per cent of the experimental subjects replied that the music notation references were helpful, and, of that number, nearly half felt that without the notation they would not have learned as much as they did.

6. The author feels that one's ability to perceive the patterns of music visually in the orchestra score is useful (but not essential) to one's understanding of the music's form. To this end, the programs are constructed to make frequent and easy references to the orchestra score. Not quite two-thirds of the experimental students stated that the programed materials helped them learn to follow the orchestra score of the composition they studied. Approximately half of these felt sure that they profited in this manner. However, a like number responded that the materials had no effect on their ability to follow the notations in the orchestra score. The relatively high frequency of "favorable" response to this question was not expected, however. It would have been interesting to discover whether or not this response reflects a real increase in their ability to follow the score (see Table 56, Appendix A).

7. In many instances, it was deemed necessary to separate specific strands of the sound's mass in order to call the students' attention to the contribution of a particular sound in the total configuration. In textbooks, these references are usually made by notation only. In the programs, these were performed on the piano; the concern here was the effectiveness of this medium of presentation instead of the orchestral instrument(s) to which the composer originally assigned the music. Also, another aspect of this procedure is the effectiveness of the "separation-of-sounds" technique itself in learning to hear the music and its design. In response to this question, 90 per cent of the individuals said they were helpful or helpful some of the time. Table 57 (Appendix A) shows that only ten per cent of the students felt this method was not effective.

8. The author argues that one of the strengths of the programed instruction method introduced in this investigation is that it is easy for the student to adapt the program to fit his own particular background of abilities. He may repeat the frames in the text or the taped references as often as he feels it to be necessary to get the full impact of the material. He can lightly skim parts of the program which are readily assimilated and/or he can bear down harder at those places which are more elusive. The latter is particularly true with respect to the musical references. Finally, certain sections of the tape adjunct are particularly good for review purposes (especially the "synthesis" portion). Nearly ninety per cent (see Table 58 in Appendix A) of the students were aware of this feature of the materials and a majority of these said they made use of the programs in that way.

9. The students were solicited concerning their opinion of the value of using the programs and adjunct tapes regularly in the course they had just completed. The primary purpose of this question was, of course, a means of ascertaining the students' attitude toward the general transfer value of the programs to other learning experiences and their significance as a part of the course of study. Table 59 (Appendix A) shows that 43 per cent strongly recommended that programs such as these be introduced as a part of Mu 112 experiences; only two per cent responded negatively, while the majority (55 per cent) felt that some students would find them profitable. Responses to question 11, which pertain directly to transfer effect of these learning experiences, show quite close agreement with these totals.

10. The students' attitudes toward the structure of the programs with specific regard to the size of the steps (frames) were interesting. Table 60 (Appendix A) reveals that only one student was of the opinion that the programs proceeded too rapidly. While ten per cent thought they moved too slowly, 83 per cent felt they were "just right" or suitable most of the time. Of the eighteen students who replied that the programs moved too slowly, twelve were in the upper half of the EMAT score distribution; these data probably signify that their reaction is more a function of their general musical ability than a fault of the programs. (The other six students simply may have resented the amount of time necessary for them to complete their listening assignment.) The fact that more than eight of every ten students reacted favorably to the graduation of steps is interpreted by the author to indicate that the students felt they had no difficulty in assimilating the subject matter content.

11. As mentioned in point 9 above, a majority of students felt that the programed analyses should become a part of the regular course of study in Mu 112. Question 11 asks the students for a direct evaluation of the programs' utility in aiding them in other learning situations in the course. Thus, question 9 is a general appraisal of the materials in the study of music literature; now the students are being requested to be more specific about the practicality of these devices judged by their transfer value. Table 61 (Appendix A) shows that exactly twice as many individuals felt there was a noticeable transfer effect to other situations in Mu 112 as those who felt the transfer was negligible. An examination of the responses of the students when the individuals are grouped by blocks (see below) revealed that there was no correspondence between musical ability as measured by the EMAT and the students' estimate of the programs' transfer value.

	Blocks 1-5	Blocks 6-10	Totals
Noted transfer	51	49	100
Did not note transfer	24	26	50
Totals	75	75	150*

*29 students chose another response

One would naturally have anticipated that students with a weaker background of skills in music would have felt more strongly that there was transfer value than was demonstrated.

12. When students were asked to check which aspects of the printed part of the programs they felt were features of the texts, the largest number of answers were in response to the phrases "covered important material" and "clear and concise". Table 62 (Appendix A) shows the percentage of response to those items were 76 and 74 per cent respectively. Note that only 30 per cent of the students checked "interesting" as a feature*. On the other hand, Table 63 (Appendix A) shows a much more regular and frequent response pattern to listed features of the tape adjuncts Three-fourths or more of the students responded to almost every listed "desirable" characteristic listed on the form descriptive of the tapes.

Responses of the students also were grouped so that it was possible to compare students in various combinations of treatment subgroups as well as by class and block. No unique patterns of response emerged from these cross-tabulations. In other words, it is apparent that the students' feelings about the effectiveness of the programs could not be traced to their unique background of abilities prior to registration in the course, to the effect of a particular instructor, to the specific program(s) studied, nor to the number of programs read. In short, the variations found in the response pattern of which students had formed concerning the values of this instructional tool (other than the main effect of the experimental treatment) were generated by unknown variables, possibly such as earlier happy or unhappy contacts with programed instruction, biases about the value of music instruction in general, and so forth. It is probably safe to say that other samples of individuals with similar training taken from other populations would react in much the same way.

Exactly half of the students either took time to elaborate on their reactions or accepted the invitation at the end of the questionnaire to make general comments. Most of the commentary was favorable and supported the continued use of the experimental materials; some students were noncommittal and pointed out strengths or weaknesses in an objective way; a very small proportion of the individuals were critical and expressed a general antipathy concerning the use of the programs.

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*Unfortunately, it is not possible to determine whether they considered this to be a fault of the text or the composition upon which it is based. Judging from the students' strong preference for programmatic music, one probably should conclude that preference for the latter is the main contributor.

Of the students who were critical, the major number commented to the effect that the programs were time-consuming. One student stated that he felt the material "seemed repetitious and boring". The students who gave objective replies about the disadvantages of the materials remarked about flaws such as "the noise in the classroom next door" or "there should be more stations".

Roughly 75 per cent of those students who returned comments on the form made favorable responses. Most of these were expressions concerning the value of the "tapes" in aiding them to hear the music and to understand more of "what is going on in the music". Several comments such as the following were received: "I really feel that learning by tapes is advantageous and of great value in understanding fully the music. Definitely continue using them in Music 112". An interesting point was brought up by a small number of students to the effect that they felt the achievement tests didn't measure the amount of learning which they had made as a result of studying the programs.

Summary

This chapter presents in detail the processes by which the data collected in the investigation to test the hypotheses were analyzed. The results of these tests have been presented and interpreted and inferences drawn relating to the stated hypotheses. It has been shown that one of the major problems which developed in this study was that the measuring instruments constructed to test the four hypotheses grouped under 1 (1a, 1b, 1c, and 1d) were found to have unusually low reliability indices, particularly the audio subtests. (The total test and the knowledge of form subtest had the highest indices.) Thus, conclusions based on the significance tests, particularly with reference to hypotheses 1b, 1c, and 1d, must remain tentative. The following observations, based on the data were of central importance as they relate to the objectives of the experiment:

1. Data obtained by the EMAT pretest showed that the three classes were very much alike on this criterion. From an examination of these data, it was clear that the variations within each of the classes based on aural acuity as measured by the EMAT were similar.

2. The frequency of significant differences found between the relevant experimental and control subgroups on the criteria is interpreted to indicate the superiority of the programed analyses used for preparing out-of-class listening assignments compared to the conventional equipment and facilities. These were found in the students' aural perception of harmony and tonality and rhythm, but not so frequently with respect to timbre, and never to melody. Knowledge of form subtest scores and total test scores revealed more frequent differences between relevant experimental and control subgroups than any one of the other subtests.

3. The transfer effect of a programed analysis of a composition in a particular form (i.e., sonata, rondo, etc.) to a composition not programed but in the same form as the one studied could not be established. To put it another way, the power of a programed analysis did not carry over for the learner into a different composition even though it was in the same form based on the criterion used. Unfortunately, as mentioned above, the sensitivity of the criteria was reduced by their low internal consistencies. With more reliable measures, it may have been possible to note the transfer effect posited.

4. No decision was reached concerning the value of studying two programs compared to the effect of one such exposure on transfer to other works. Although on ten occasions, significant differences were found between the relevant experimental and control subgroups, the low ratio of these differences to comparisons tested made it difficult to arrive at a firm conclusion. It was heartening to note, however, that the larger proportion of the differences occurred between means based on the audio subtests, strengthening the proposition that aural perception within the context of a musical art form could be developed by auto-instruction.

5. The findings do not support conclusively that relative early or late placement of the programed analyses in the school term make a substantial difference on subsequent performance with regard to works not audited prior to testing. However, as pointed out above, significant differences did appear again in the audio subtests, which fact encourages one to believe that skills in aural perception can be developed by auto-instruction and transferred to other compositions not previously audited.

6. Comparisons made between the experimental subgroups and the general control subgroups, while admittedly they could not

be used to test the hypotheses directly, clearly revealed that the use of the programs caused a systematic difference to emerge among these groups. Using this evidence, one cannot determine which element or elements of the use of the programed technique resulted in these differences. Nonetheless, the high proportion of differences among the means in the hypothesized direction shows that the use of the programs do make an impact on students' aural perception.

7. Preferences for particular compositions were not affected by the programed analyses. Observations based on other groupings (treatment, block, class) resulted in similar rankings: consistently the analysis revealed that the programmatic works were preferred over the absolute forms. Apparently, the amount of knowledge an individual had accumulated about the form and structure of compositions made no difference in his preference rankings. Thus, students who had studied a composition by the programed analysis did not consistently show any different pattern of preferences than those in the sample groups who studied the same works conventionally. Persons with high scores on the EMAT pre-test (both experimental and control sections) demonstrated the same preference patterns as those with low scores.

8. A substantial majority of the students who had studied the experimental materials felt that the programed analyses were effective means of learning how to listen to a musical composition. The majority stated that the experimental materials were more valuable to them than the conventional facilities and procedures used in preparing outside listening assignments.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

The central purpose of this section will be to consider the results of the experiment in an attempt to formulate generalizations regarding the instructional value of the use of linearly programed analyses of musical works with taped musical references. Another objective in this part of the report is to make a translation of the observations into the practical significance of these tools as they might contribute to the attainment of educational goals. Suggestions will also be made concerning the value of and need for further investigation and experimentation relating directly and indirectly to the problem of teaching individuals to listen intelligently to musical art forms.

Review of Rationale

It seems to be important that instructional tools be developed to reach individuals within a wide age range who possess varying degrees of musical ability and aptitude and who do not (or cannot) expect to make an intensive study of music. The general musical education of this large target population, in contrast to the relative few who look forward to a serious study of music*, is a matter of increasing concern to music educators. Because of the rising enrollments in our public schools and colleges, introductory classes in music literature (often called "music appreciation" courses) are necessarily being increased in size to accommodate the growing student load. Obviously, ways must be sought to adjust instructional modes so that an increase in student numbers does not necessarily have to mean a corresponding reduction in teaching effectiveness.

An important value of the programed instructional materials is that they are self-teaching devices. The introduction of this technique into the course of study frees the instructor to develop in his large classes subtle and/or detailed aspects of his course which may not be so economically treated by means of programed devices, but can be the subject of lectures to large groups of students.

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*Those who major in music normally meet in comparatively small classes and/or are tutored individually, especially so in applied music.

Tape transports and headsets are generally not expensive nor technically sophisticated instructional modules. Ordinarily tape transports can be installed as an integral part of the play-back apparatus of any amplification unit by connecting it in parallel with the record turntable*.

It was expected (and demonstrated) that students could be led to achieve a deeper understanding of the form of a particular design when they are guided by a program than when assigned to conventional materials and aids. It was also expected that individuals would develop a keener auditory awareness of some of the components which shape the form of the composition as well. The latter, of course, is of particular interest to the music educator since it is a student's aural responsiveness which is critical in his understanding of music literature. In short, the individual must become perceptive of the variations within the sounds themselves as the primary source for his comprehension and appreciation. To provide a means of self-instruction for the musically naive student so that he himself is in a position to refine his aural comprehension relating to a specific musical work seems to be a significant addition to educational procedure.

Features of the Experimental Materials

The author lists the following significant features of the experimental materials which seem to be of particular value in helping to develop an individual's skill in listening to music:

1. The student has maximum control over the use of the programed materials to compensate or adjust for his own capabilities and interests. This is especially true with respect to the use of the taped music references used in conjunction with the score (this flexibility is not present to such a marked degree in the printed text of the programs, of course). Since each of the taped references deals with one idea, it is a simple and effective procedure to re-wind the tape to the desired section for as many replays as necessary until the ear grasps the outline of the sound.

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*Maximum benefits from these or similar programed materials are realized when students work individually. In some cases, however, when students can work together at approximately the same rate of speed and have a similar background of aural skills, it is possible that a station could accommodate more than a single individual at the same time.

Such a procedure, of course, is difficult with the conventional disk facility even if the beginner knows what to look for. Also, the quality of the tape signals does not attenuate nor deteriorate with many replays as is the case with disk recordings*.

2. Skill at interpreting the musical score is not an essential prerequisite for the student to comprehend the significance of each frame. The sounds recorded on the tape are the main stimuli; the inserted line scores and orchestral score references are included to aid those individuals who are capable of profiting from them and also to encourage others to learn to use the score who may have a basic understanding of music notation. The virtual elimination of this restriction at once widens the usefulness of the device to include younger individuals of high school age (perhaps students in junior high school also) and adults who have never had the opportunity to learn the skills of reading the score.

3. The sounds of the music are programed in order to give individuals a maximum opportunity to observe specific features of the architecture as the work evolves. In order to maintain a constant awareness of the sounds as musical expressions, small sections (i.e., figures, motives, phrases) are always shown in the proper context of larger parts at convenient places in the program.

4. The vocabulary level of the texts is not difficult; any terms and phrases used in special ways and references are made a part of the learning experiences. Therefore, the programs are practically useful in this regard for younger individuals also*. It is reasonable to expect that adults also, even those with a limited educational background, would not find the vocabulary a barrier either.

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*The risk of injury to the tone arm assembly, particularly to the stylus increases in direct proportion to the number of times the equipment is manipulated in this way to say nothing of the probability of damage to the record disk.

**In early trials of the experimental materials, the author included as part of the sample a few secondary school students; these youngsters had no difficulty in reading the texts.

5. Several of the taped musical references provide convenient portions of the composition to which students can return for purposes of review*. The author observed that some students in the experimental subgroups returned to the programed materials (after they had completed the program) several times for the avowed purpose of "practicing". Since listening is a skill which must be learned, it seems logical that material be presented in such a way that a person can exercise and rehearse in order to develop a desired level of aural sensitivity. Certainly the custom of listening repeatedly to entire compositions (particularly if the form is complex) is not a practical approach for the unsophisticated listener. The beginner finds it difficult to grasp the significance of a large work without a closer examination of its finer details. The experimental materials constructed for this study not only make this possible, but also provide opportunities for the novice to practice. In this study, some students reported that they found the syntheses useful for testing themselves on the identification of thematic material, realization of particular methods of developing patterns, and so forth.

Recommendations for Further Research

Use of Programs. It seems important to consider the possibility that some modifications of the approach used in this experiment might be valuable. The test in the present study essentially was to discover the usefulness and practicality of programing the analyses of three compositions in different forms from the same period in order to test the stated hypotheses. However, it is reasonable to speculate about the advantages of other grouping or arrangements of programs as effective study procedures to develop listening skills. The following questions summarize uses and procedures of programing for this purpose which appear to be profitable topics for further study and experimentation:

1. Is there merit in first introducing programs built from smaller musical forms and following these with analyses of more complicated structures? If this were done, it might

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*The programs feature "synthesis" sections which enable the reader to follow a section of the movement made up of smaller portions already analyzed. By this procedure, the student can try out his listening skills within a larger framework of reference, yet not so large that he becomes confused.

be possible to "steepen" the gradients among succeeding frames of all programs since the early ones would be based on more transparent structures. Similarly, of course, programs developed from the materials of larger and more complex forms could be shorter since certain skills achieved by the earlier programs would make it possible to eliminate a relatively large percentage of the frames. This approach might also be received favorably by students since it has been demonstrated in this study that required amount of time spent reading programs is a matter of practical concern for them.

2. Might it not be economical of time to select excerpts from works, for pre-determined purposes, illustrating particular techniques in composition? For example, demonstrations of contrapuntal treatment, singularly apt techniques of using the orchestra for special effects, or the function of tonality and/or modality modifications all could be separate topics for different programs. In this way one possibly could help the student not only to get insights into the evolution of musical designs, but also help to discipline his ear to be more aware of the sounds themselves.

3. Would it be beneficial for untrained auditors to study programs which would have as their teaching schemes excerpts from the same composition but performed by different ensembles? This approach is a variation of the technique outlined in point two above, except that here the focus would be not only on the composer's skill but also on the interpretation by the performers*. The obvious rationale for the use of this method is that the listener can begin to "appreciate" the composer's technique through the several interpretations of the relevant passages.

Measurement of Aural Skills. One of the important findings of this study is that measuring aural perceptiveness of these skills as they pertain to a specific musical work is difficult to do with a satisfactory degree of consistency and accuracy. It appears that, even under controlled conditions, the amount of uncertainty and vacillation within the individual concerning the features of the sounds contributes considerably to this condition.

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*The author has observed that at least one FM radio station employs this basic plan in broadcasting serious music. Of course, the broadcasts are not programed although they are intended to be "educational".

It is possible, of course, that in a person's zeal to develop a device to measure accurately a person's aural responsiveness to stimuli within the context of a work of art he may run the risk of over-simplifying item references and thereby reduce the validity of the enterprise. If one is concerned with the identification of the source of the rhythmic pattern as played by the second violin section, for example, isolating the passage by masking out all the contiguous sounds in some way can alter the relationship of the auditor to the art form as the composer intended it to be heard. In effect, therefore, the measurement may be of another skill.

The example above is only one of several difficulties with which one must be concerned in trying to develop reliable and valid measures of these specific skills. It is a problem which must be met; progress here is crucial if significant research is to be undertaken in the resolution of difficulties in further evaluative studies of aural perception.

Transfer of Aural Perceptions. Research needs to be initiated to seek ways and means to facilitate transfer of an individual's aural perceptions and awarenesses developed regarding one composition to another musical expression. Although each composition is unique, the materials and ingredients used to shape a musical work are, for the most part, similar among all art forms.

The position that the presentation to students of each new work must entail a totally new set of skills for the auditor seems untenable, of course. Certainly the individual should be expected to bring to the new composition something he gained from previous experiences. What factors or combinations of factors are most useful and practical in assisting the student to make this transfer? Some music educators, for example, teach within the framework of historical references reasoning that students' observations of the development of music through particular time periods are an effective means by which they can begin to grasp an understanding and perception of musical design.

It seems plausible to surmise that if a familiar and an unfamiliar work shared some common musical features, the student would become sensitive more readily to the unfamiliar work than if the two were totally different. For this reason, it was hypothesized in this study that the common musical dimension of form (i.e., rondo, sonata, etc.) would help the student in this regard. However, the data collected suggest that the hypothesis is questionable. Further exploration into this problem seems to be a fruitful area for investigation.

Perception Differences. In this study, there was sufficient variation noted in the number of statistically significant differences among comparisons made between the relevant experimental and control subgroups on the subtests to cause one to wonder if this was due to chance or to the operation of a real effect. For example, in the melody subtests the magnitude of the differences in the 60 comparisons never were large enough to be significant, while in the harmony and tonality subtests significant differences were found in ten instances. The question inevitably arises concerning the reason for these differences.

Two explanations for this observation sit at the surface, of course: a) the ability to hear particular sounds in a composition were not consistent within the individual, and b) the subtests were inadequate measures of an individual's ability to perceive these sounds. Finally, it may be that the interaction of these two effects noted above in some unpredictable manner may have confounded the results.

Variation among individuals' perceptions of certain sounds within musical compositions certainly should be anticipated; whether definite patterns among certain skill groupings (melody, harmony, etc.) can be predicted is quite another matter. Further investigation of this question appears to be profitable not only for structuring the content of programed analyses, but also for classroom instructional procedure in general.

Preferences. More research needs to be done to investigate root causes for the development of preferences among individuals for broad categories of music. While it may not be crucial in terms of long-range goals of music education to determine whether or not preferences can be modified, it does seem that such research could ultimately lead to disclosure of factors which play a major role in determining preference changes for specified groups of individuals. In turn, of course, this information would most likely be useful to educators in learning more about individuals' development of skills and knowledges which are reflected in their preference expressions.

Undoubtedly preference patterns for music evolve partly as a product of people's backgrounds of experience; these patterns also probably shift from time to time as the individual comes in contact with new stimuli and as he matures. Yet it does seem reasonable to believe that for specified groups of individuals some common elements could be isolated which excite people and nudge them in predictable directions.

Summary of Findings

Below is a list of statements which summarize the more important outcomes of the study. These statements are phrased in general expressions so that the implications of the research can be evaluated within a broad reference. The observations of the experiment resulted in data which suggest that:

1. Individuals' aural skills relating to a given work are developed significantly more when the work is studied by the use of a programed analysis and tape adjunct than the aural skills of persons who study the same work by means of textbooks, conventional library references, and recordings.

2. The form of a composition does not appear to be a significant factor in facilitating the transfer of aural skills from one composition to another even though a programed analysis is the means of instruction in the earlier composition.

3. A direct relationship between numbers of programed analyses studied and a significantly keener aural perception of variations or modifications of musical sounds in works not previously audited cannot be clearly established.

4. The transfer of an individual's aural skills developed earlier to an unfamiliar work is not significantly modified by the factor of relative time placement in a term of study that a programed analysis is introduced.

5. Objective test data do not substantiate the claim of students that programed analyses facilitate transfer of aural skills to new learning situations.

6. An increase in the amount of knowledge an individual has concerning a particular composition does not seem to be a factor in modifying his preference for that composition as listening fare compared to others. Nor are preference patterns for music categorized as program music or absolute music determined by an individual's aural skills in general or as these relate to specific compositions.

7. Studying a composition by the use of a programed analysis is not a factor in modifying students' preferences for that composition when compared to compositions studied by conventional means.

8. There is no significant relationship between the time a student spends listening to a composition and his aural sensitivity to the work. Significant differences are apparently due more to the effect of how study time is spent rather than how much study time is consumed.

9. Measuring aural perception with a high degree of consistency as these perceptions relate to a particular composition is a difficult procedure. The data obtained substantiate similar observations by other music educators.

10. Individuals who have a minimal background of training in music appreciate the guidance of the programed analysis. Students feel that the programs are powerful instructional tools in spite of the fact that several students dislike spending the necessary time reading the analyses.

11. Students find it convenient to use programed taped excerpts for practicing listening skills relating to a specific composition. The tape facilities encourage students to listen repeatedly to parts of the work with which they wish to familiarize themselves.

12. The use of programed analyses in a course of instruction in music literature presents no unique problems with reference to practical considerations such as staffing, space, or students' manipulation of tape equipment.

13. One can expect to observe a much greater variation in study time spent by individuals studying a composition when a programed analysis is used than when conventional library materials are used. A likely reason for this phenomenon is that programed materials are more flexible in meeting the unique needs of students who have varying backgrounds of skills and interests than the traditional aids and facilities used in preparing outside-of-class listening assignments.

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APPENDIX A

TABLES

Table 15

TEST OF HYPOTHESIS 1a: COMPARISONS OF HARMONY AND TONALITY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	32.9	32.4	32.1	NS
1B	1	II	38.0	37.9	32.4	NS
1C	1	III	37.2	34.8	36.2	Signif.
1B	2	I	38.2	34.9	35.0	Signif.
1C	2	II	38.3	35.0	32.5	Signif.
1A	2	III	30.5	29.9	30.9	NS
1B	3	I	35.5	34.7	35.0	NS
1C	3	II	36.2	36.7	32.5	NS
1A	3	III	34.0	32.4	30.9	NS
1C	4	I	37.9	33.5	35.2	Signif.
1A	4	II	32.0	32.6	28.4	NS
1B	4	III	36.8	36.2	35.7	NS
1C	5	I	40.4	35.8	35.2	Signif.
1A	5	II	34.0	31.6	28.4	NS
1B	5	III	36.9	36.8	35.7	NS
1C	6	I	37.9	38.1	35.2	NS
1A	6	II	32.0	34.5	28.4	NS
1B	6	III	36.8	37.2	35.7	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement -sonata)

Table 16

TEST OF HYPOTHESIS 1b: COMPARISONS OF HARMONY AND TONALITY SUBTEST MEANS

	Compar-		Relevant Subgroups		Gen'l	Signif-
Test	ison	Class	Exper.	Control	Control	icance
2B	7	I	34.4	34.3	34.1	NS
2C	7	II	33.0	34.5	29.9	NS
2A	7	III	38.2	36.4	36.05	NS
2C	8	I	34.0	32.3	34.5	NS
2A	8	II	34.8	36.5	32.4	NS
2B	8	III	39.9	35.8	35.8	Signif.

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement -variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 17

TEST OF HYPOTHESIS 1c: COMPARISONS OF HARMONY AND TONALITY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	9	I	33.5	38.1	35.2	NS
1A	9	II	32.6	34.5	28.4	NS
1B	9	III	36.2	37.2	35.7	NS
2A	10	I	36.9	34.7	36.2	NS
2B	10	II	33.1	36.2	32.7	NS
2C	10	III	35.7	37.7	33.6	NS
2A	11	I	37.9	40.2	36.2	NS
2B	11	II	37.2	37.0	32.7	NS
2C	11	III	32.4	34.3	33.6	NS
2B	12	I	34.3	35.3	34.1	NS
2C	12	II	34.5	35.1	29.9	NS
2A	12	III	36.4	37.6	36.1	NS
2B	13	I	34.7	37.2	34.1	NS
2C	13	II	35.9	34.9	29.2	NS
2A	13	III	38.0	33.6	36.1	Signif.
2C	14	I	32.3	33.6	34.5	NS
2A	14	II	36.5	39.2	32.4	NS
2B	14	III	35.8	36.6	35.8	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 18

TEST OF HYPOTHESIS 1d: COMPARISONS OF HARMONY AND TONALITY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	15	I	38.1	35.8	35.2	NS
1A	15	II	34.5	31.6	28.4	NS
1B	15	III	37.2	36.8	35.6	NS
1C	16	I	37.9	40.4	35.2	NS
1A	16	II	32.0	34.0	38.4	NS
1B	16	III	36.8	36.9	35.6	NS
2B	17	I	34.4	34.7	34.1	NS
2C	17	II	33.0	35.9	29.9	NS
2A	17	III	38.2	38.0	36.0	NS
2B	18	I	35.3	35.0	34.1	NS
2C	18	II	35.1	34.5	29.9	NS
2A	18	III	37.6	37.0	36.0	NS
2C	19	I	34.0	30.4	34.5	Signif.
2A	19	II	34.8	39.2	32.4	NS
2B	19	III	39.9	36.3	35.8	Signif.
2C	20	I	33.6	35.7	34.5	NS
2A	20	II	39.2	34.6	32.4	Signif.
2B	20	III	36.6	37.5	35.8	NS

1A = Test based on Haydn's 101st Symphony (fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony (second movement - variations)

1C = Test based on Mozart's 40th Symphony (first movement - sonata)

2A = Test based on Haydn's 100th Symphony (second movement - rondo)

2B = Test based on Beethoven's 5th Symphony (second movement - variations)

2C = Test based on Beethoven's 8th Symphony (first movement - sonata)

Table 19

TEST OF HYPOTHESIS 1a: COMPARISONS OF KNOWLEDGE OF FORM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	41.5	34.2	34.8	Signif.
1B	1	II	36.1	31.3	26.8	Signif.
1C	1	III	34.6	32.1	31.9	Signif.
1B	2	I	34.9	31.1	29.9	Signif.
1C	2	II	33.7	31.1	28.2	NS
1A	2	III	42.1	38.5	37.0	Signif.
1B	3	I	34.3	35.5	29.9	NS
1C	3	II	36.6	32.0	28.2	Signif.
1A	3	III	43.2	35.1	37.0	Signif.
1C	4	I	33.7	29.0	29.2	Signif.
1A	4	II	41.6	36.4	30.8	Signif.
1B	4	III	35.0	34.3	32.1	NS
1C	5	I	30.8	28.2	29.2	NS
1A	5	II	42.8	35.6	30.8	Signif.
1B	5	III	29.8	30.1	32.1	NS
1C	6	I	33.7	28.0	29.2	Signif.
1A	6	II	41.6	30.9	30.8	Signif.
1B	6	III	35.0	32.4	32.1	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

Table 20

TEST OF HYPOTHESIS 1b: COMPARISONS
OF KNOWLEDGE OF FORM
SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
2B	7	I	34.2	37.5	32.5	NS
2C	7	II	33.4	35.5	28.6	NS
2A	7	III	35.4	31.3	27.3	NS
2C	8	I	34.5	32.1	31.8	NS
2A	8	II	31.6	25.0	23.5	Signif.
2B	8	III	36.7	35.7	33.2	NS

2A = Test based on Haydn's 100th Symphony (second movement - rondo)

2B = Test based on Beethoven's 5th Symphony (second movement - variations)

2C = Test based on Beethoven's 8th Symphony (first movement - sonata)

Table 21

TEST OF HYPOTHESIS 1c: COMPARISONS OF KNOWLEDGE OF FORM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	9	I	29.0	28.0	29.2	NS
1A	9	II	36.4	30.9	30.8	Signif.
1B	9	III	34.3	32.4	32.1	NS
2A	10	I	29.7	32.2	27.2	NS
2B	10	II	34.8	35.3	27.4	NS
2C	10	III	36.2	36.3	32.1	NS
2A	11	I	28.5	28.0	27.2	NS
2B	11	II	36.3	37.8	27.4	NS
2C	11	III	31.8	34.2	32.1	NS
2B	12	I	37.5	34.1	32.5	NS
2C	12	II	35.5	30.8	28.7	Signif.
2A	12	III	31.3	27.9	27.3	NS
2B	13	I	33.2	34.2	32.5	NS
2C	13	II	33.2	34.2	28.7	NS
2A	13	III	32.1	31.0	27.3	NS
2C	14	I	32.1	31.6	31.8	NS
2A	14	II	25.0	27.8	23.5	NS
2B	14	III	35.7	31.4	33.2	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 22

TEST OF HYPOTHESIS 1d: COMPARISONS OF KNOWLEDGE OF FORM SUBTEST MEANS

			Relevant Subgroups			
Test	Comparison	Class	Exper.	Control	Gen'l Control	Significance
1C	15	I	28.0	28.2	29.2	NS
1A	15	II	30.9	35.6	30.9	NS
1B	15	III	32.4	30.1	32.1	NS
1C	16	I	33.7	30.8	29.2	NS
1A	16	II	41.6	42.8	30.8	NS
1B	16	III	35.0	29.8	32.1	Signif.
2B	17	I	34.2	33.2	32.5	NS
2C	17	II	33.4	33.2	28.7	NS
2A	17	III	35.4	32.1	27.3	NS
2B	18	I	34.1	33.4	32.5	NS
2C	18	II	30.8	33.7	28.6	NS
2A	18	III	27.9	31.9	27.3	NS
2C	19	I	34.5	35.0	31.8	NS
2A	19	II	31.6	31.4	23.5	NS
2B	19	III	36.7	34.9	33.2	NS
2C	20	I	31.6	27.6	31.8	NS
2A	20	II	27.8	29.3	23.5	NS
2B	20	III	31.4	34.2	33.2	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 23

TEST OF HYPOTHESIS 1a: COMPARISONS OF MELODY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	37.2	36.6	37.1	NS
1B	1	II	39.8	39.4	33.6	NS
1C	1	III	39.2	38.6	38.1	NS
1B	2	I	38.9	38.2	36.3	NS
1C	2	II	39.2	37.3	34.4	NS
1A	2	III	37.9	37.5	37.0	NS
1B	3	I	39.6	38.6	36.3	NS
1C	3	II	40.3	38.3	34.4	NS
1A	3	III	37.0	36.4	37.0	NS
1C	4	I	38.5	37.5	37.7	NS
1A	4	II	37.5	37.4	33.0	NS
1B	4	III	38.5	39.7	39.3	NS
1C	5	I	39.1	38.1	37.7	NS
1A	5	II	38.9	37.2	33.0	NS
1B	5	III	37.1	39.3	39.2	NS
1C	6	I	38.5	36.7	37.7	NS
1A	6	II	37.5	36.8	33.0	NS
1B	6	III	38.5	41.9	39.3	NS

1A = Test based on Haydn's 101st Symphony (fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony (second movement - variations)

1C = Test based on Mozart's 40th Symphony (first movement - sonata)

Table 24

TEST OF HYPOTHESIS 1b: COMPARISONS OF MELODY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
2B	7	I	37.0	35.9	35.7	NS
2C	7	II	36.4	35.1	31.9	NS
2A	7	III	32.4	30.8	32.9	NS
2C	8	I	33.9	33.6	34.8	NS
2A	8	II	34.0	34.3	29.7	NS
2B	8	III	36.6	36.9	35.5	NS

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 25

TEST OF HYPOTHESIS 1c: COMPARISONS OF MELODY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	9	I	37.5	36.7	37.7	NS
1A	9	II	37.4	36.8	33.0	NS
1B	9	III	39.7	41.9	39.3	NS
2A	10	I	32.1	33.0	32.1	NS
2B	10	II	36.8	38.4	32.0	NS
2C	10	III	34.5	33.0	34.4	NS
2A	11	I	33.7	35.3	32.1	NS
2B	11	II	36.0	37.7	32.0	NS
2C	11	III	35.4	32.7	34.4	NS
2B	12	I	35.9	37.0	35.7	NS
2C	12	II	35.1	32.0	31.9	NS
2A	12	III	30.8	31.8	32.9	NS
2B	13	I	36.5	38.0	35.7	NS
2C	13	II	35.9	36.9	31.9	NS
2A	13	III	32.9	32.8	32.9	NS
2C	14	I	33.6	33.9	34.8	NS
2A	14	II	34.3	32.2	29.7	NS
2B	14	III	36.9	34.2	35.6	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 26

TEST OF HYPOTHESIS 1d: COMPARISONS OF MELODY SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l	Significance
			Exper.	Control	Control	
1C	15	I	36.7	38.1	37.7	NS
1A	15	II	36.8	37.2	33.0	NS
1B	15	III	41.9	39.3	39.3	NS
1C	16	I	38.5	39.1	37.7	NS
1A	16	II	37.5	38.9	33.0	NS
1B	16	III	38.5	37.1	39.3	NS
2B	17	I	37.0	36.5	35.7	NS
2C	17	II	36.4	35.9	31.9	NS
2A	17	III	32.4	32.9	32.9	NS
2B	18	I	37.0	36.9	35.7	NS
2C	18	II	32.0	32.4	31.9	NS
2A	18	III	31.8	35.1	32.9	NS
2C	19	I	33.9	33.5	34.7	NS
2A	19	II	34.0	34.5	29.7	NS
2B	19	III	36.6	34.6	35.5	NS
2C	20	I	33.9	36.9	34.7	NS
2A	20	II	32.2	32.9	29.7	NS
2B	20	III	34.2	38.7	35.5	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 27

TEST OF HYPOTHESIS 1a: COMPARISONS OF RHYTHM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	37.8	36.9	37.0	NS
1B	1	II	39.4	37.3	33.4	NS
1C	1	III	37.0	38.1	35.5	NS
1B	2	I	39.5	35.8	34.4	Signif.
1C	2	II	40.2	35.9	34.6	Signif.
1A	2	III	35.8	35.4	34.8	NS
1B	3	I	40.5	36.4	34.4	Signif.
1C	3	II	39.1	39.4	34.6	NS
1A	3	III	38.3	37.6	34.8	NS
1C	4	I	37.9	39.2	36.9	NS
1A	4	II	35.8	34.5	33.5	NS
1B	4	III	37.5	38.6	35.3	NS
1C	5	I	38.7	34.8	36.9	Signif.
1A	5	II	39.2	38.6	33.5	NS
1B	5	III	35.1	34.3	35.3	NS
1C	6	I	37.9	38.0	36.9	NS
1A	6	II	35.8	38.2	33.5	NS
1B	6	III	37.5	39.1	35.3	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 28

TEST OF HYPOTHESIS 1b: COMPARISONS OF RHYTHM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
2B	7	I	34.4	34.4	34.7	NS
2C	7	II	29.9	34.3	28.0	NS
2A	7	III	39.6	39.3	37.7	NS
2C	8	I	30.0	31.0	31.6	NS
2A	8	II	37.7	39.0	33.3	NS
2B	8	III	38.8	37.5	35.7	NS

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 29

TEST OF HYPOTHESIS 1c: COMPARISONS
OF RHYTHM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1C	9	I	39.2	38.0	36.9	NS
1A	9	II	34.5	38.2	33.5	NS
1B	9	III	38.6	39.1	35.3	NS
2A	10	I	36.2	35.1	37.3	NS
2B	10	II	34.8	37.7	32.0	NS
2C	10	III	31.3	27.7	28.8	Signif.
2A	11	I	39.1	35.6	37.3	Signif.
2B	11	II	35.3	38.2	32.0	NS
2C	11	III	30.8	26.9	28.8	Signif.
2B	12	I	34.4	32.6	34.7	NS
2C	12	II	34.3	32.0	28.0	NS
2A	12	III	39.3	39.7	37.7	NS
2B	13	I	36.9	37.2	34.7	NS
2C	13	II	30.1	29.8	28.0	NS
2A	13	III	36.8	38.6	37.7	NS
2C	14	I	31.0	29.6	31.6	NS
2A	14	II	39.0	39.9	33.3	NS
2B	14	III	37.5	36.1	35.7	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - variations)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 30

TEST OF HYPOTHESIS 1d: COMPARISONS OF RHYTHM SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups-		Gen'l Control	Significance
			Exper.	Control		
1C	15	I	38.0	34.8	36.9	NS
1A	15	II	38.2	38.6	33.5	NS
1B	15	III	39.1	34.3	35.3	Signif.
1C	16	I	37.9	38.7	36.9	NS
1A	16	II	35.8	39.2	33.5	NS
1B	16	III	37.5	35.1	35.3	NS
2B	17	I	34.4	37.2	34.6	NS
2C	17	II	29.9	30.1	28.0	NS
2A	17	III	39.6	36.8	37.7	NS
2B	18	I	32.6	34.1	34.6	NS
2C	18	II	32.0	31.4	28.0	NS
2A	18	III	39.7	40.2	37.7	NS
2C	19	I	30.0	29.9	31.6	NS
2A	19	II	37.7	37.5	33.3	NS
2B	19	III	38.8	35.3	35.7	NS
2C	20	I	29.6	30.8	31.6	NS
2A	20	II	39.9	35.6	33.3	Signif.
2B	20	III	36.1	35.7	35.7	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 31

TEST OF HYPOTHESIS 1a: COMPARISONS OF TIMBRE SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1A	1	I	35.4	34.7	34.0	NS
1B	1	II	33.9	32.8	28.9	NS
1C	1	III	39.0	38.7	39.2	NS
1B	2	I	32.7	35.6	31.0	NS
1C	2	II	39.1	38.4	35.8	NS
1A	2	III	36.6	35.2	35.7	NS
1B	3	I	32.1	34.4	31.0	NS
1C	3	II	40.8	39.9	35.8	NS
1A	3	III	35.9	35.0	35.7	NS
1C	4	I	39.6	37.7	38.8	NS
1A	4	II	41.5	35.8	33.7	Signif.
1B	4	III	31.0	31.0	32.9	NS
1C	5	I	38.4	38.6	38.8	NS
1A	5	II	39.6	37.2	33.7	NS
1B	5	III	33.6	33.9	32.9	NS
1C	6	I	39.6	39.0	38.8	NS
1A	6	II	41.5	38.1	33.7	NS
1B	6	III	31.0	32.4	32.9	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

Table 32

TEST OF HYPOTHESIS 1b: COMPARISONS OF TIMBRE SUBTEST MEANS

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
2B	7	I	34.8	31.8	34.6	NS
2C	7	II	34.0	36.6	29.7	NS
2A	7	III	39.8	37.9	36.6	NS
2C	8	I	32.8	32.1	31.4	NS
2A	8	II	40.7	34.7	33.5	Signif.
2B	8	III	36.7	39.3	37.9	NS

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 33

TEST OF HYPOTHESIS 1c: COMPARISONS OF TIMBRE SUBTEST MEANS

	Compar-		Relevant Subgroups		Gen'l	Signif-
Test	ison	Class	Exper.	Control	Control	icance
1C	9	I	37.7	39.0	38.8	NS
1A	9	II	35.8	38.1	33.7	NS
1B	9	III	31.0	32.4	32.9	NS
2A	10	I	35.3	35.4	36.1	NS
2B	10	II	36.0	39.0	30.8	NS
2C	10	III	32.8	34.3	30.0	NS
2A	11	I	36.4	37.4	36.1	NS
2B	11	II	36.2	36.3	30.8	NS
2C	11	III	29.0	31.6	30.0	NS
2B	12	I	31.8	34.0	34.6	NS
2C	12	II	36.6	30.9	29.7	Signif.
2A	12	III	37.9	38.4	36.6	NS
2B	13	I	36.0	37.7	34.6	NS
2C	13	II	30.7	31.4	29.7	NS
2A	13	III	36.3	40.0	36.6	NS
2C	14	I	32.1	29.0	31.4	NS
2A	14	II	34.7	38.2	33.5	NS
2B	14	III	39.3	35.1	37.9	Signif.

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 34

TEST OF HYPOTHESIS 1d: COMPARISONS OF TIMBRE SUBTEST MEANS

	Compar-		Relevant Subgroups		Gen'l	Signif-
Test	ison	Class	Exper.	Control	Control	icance
1C	15	I	39.0	38.6	38.8	NS
1A	15	II	38.1	37.2	33.7	NS
1B	15	III	32.4	33.9	32.9	NS
1C	16	I	39.6	38.4	38.8	NS
1A	16	II	41.5	39.6	33.7	NS
1B	16	III	31.0	33.6	32.9	NS
2B	17	I	34.8	36.0	34.6	NS
2C	17	II	34.0	30.7	29.7	NS
2A	17	III	39.8	36.3	36.6	NS
2B	18	I	34.0	33.6	34.6	NS
2C	18	II	30.9	28.6	29.7	NS
2A	18	III	38.4	36.1	36.6	NS
2C	19	I	32.8	34.4	31.4	NS
2A	19	II	40.7	38.7	33.5	NS
2B	19	III	36.7	37.4	37.9	NS
2C	20	I	29.0	32.3	31.4	NS
2A	20	II	38.2	36.6	33.5	NS
2B	20	III	35.1	37.6	37.9	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 35

TEST OF HYPOTHESIS 1a: COMPARISONS BY AUDIO PORTION ONLY

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	143.3	139.6	140.1	NS
1B	1	II	151.1	147.3	128.3	NS
1C	1	III	152.6	150.3	148.9	NS
1B	2	I	149.2	144.5	136.8	NS
1C	2	II	156.9	146.6	137.3	NS
1A	2	III	140.8	138.0	138.4	NS
1B	3	I	147.7	144.0	136.8	NS
1C	3	II	156.4	154.3	137.3	NS
1A	3	III	145.2	141.3	138.4	NS
1C	4	I	153.9	147.9	148.6	NS
1A	4	II	146.8	140.3	128.7	NS
1B	4	III	143.8	145.5	143.1	NS
1C	5	I	156.6	147.3	148.6	Signif.
1A	5	II	151.7	144.6	128.7	NS
1B	5	III	142.7	144.3	143.1	NS
1C	6	I	153.9	151.8	148.6	NS
1A	6	II	146.8	147.6	128.7	NS
1B	6	III	143.8	150.6	143.1	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

Table 36

TEST OF HYPOTHESIS 1b: COMPARISONS BY AUDIO PORTION ONLY

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
2B	7	I	140.6	136.4	139.1	NS
2C	7	II	133.3	140.5	119.6	NS
2A	7	III	150.0	144.4	143.3	NS
2C	8	I	130.7	129.0	132.2	NS
2A	8	II	147.2	144.5	128.8	NS
2B	8	III	152.0	149.5	145.0	NS

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 37

TEST OF HYPOTHESIS 1c: COMPARISONS BY AUDIO PORTION ONLY

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	9	I	147.9	151.8	148.6	NS
1A	9	II	140.3	147.6	128.7	NS
1B	9	III	145.5	150.6	143.1	NS
2A	10	I	140.4	138.2	141.6	NS
2B	10	II	140.7	151.3	127.5	NS
2C	10	III	134.3	132.7	126.7	NS
2A	11	I	147.1	148.5	141.6	NS
2B	11	II	144.7	149.2	127.5	NS
2C	11	III	127.6	125.5	126.7	NS
2B	12	I	136.4	138.9	139.1	NS
2C	12	II	140.5	130.0	119.6	Signif.
2A	12	III	144.4	147.5	143.3	NS
2B	13	I	144.4	149.8	139.0	NS
2C	13	II	132.6	133.0	119.6	NS
2A	13	III	144.0	145.0	143.3	NS
2C	14	I	129.0	126.1	132.2	NS
2A	14	II	144.5	149.5	128.8	NS
2B	14	III	149.5	142.0	144.9	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 38

TEST OF HYPOTHESIS 1d: COMPARISONS BY AUDIO PORTION ONLY

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	15	I	151.8	147.3	148.6	NS
1A	15	II	147.6	144.6	128.7	NS
1B	15	III	150.6	144.3	143.1	NS
1C	16	I	153.9	156.6	148.6	NS
1A	16	II	146.3	151.7	128.7	NS
1B	16	III	143.8	142.7	143.1	NS
2B	17	I	140.6	144.4	139.1	NS
2C	17	II	140.7	144.7	127.5	NS
2A	17	III	150.0	144.0	143.3	NS
2B	18	I	138.9	139.6	139.1	NS
2C	18	II	130.0	126.9	119.6	NS
2A	18	III	147.5	148.4	143.3	NS
2C	19	I	130.7	128.2	132.2	NS
2A	19	II	147.2	149.9	128.8	NS
2B	19	III	152.0	143.6	144.9	NS
2C	20	I	126.1	135.7	132.2	NS
2A	20	II	149.5	139.7	128.8	Signif.
2B	20	III	142.0	149.5	144.9	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 39

TEST OF HYPOTHESIS 1a: COMPARISONS OF TOTAL TEST SCORES

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1A	1	I	184.9	173.8	174.9	Signif.
1B	1	II	187.2	179.1	155.1	Signif.
1C	1	III	187.0	182.3	180.9	NS
1B	2	I	184.1	175.6	166.7	Signif.
1C	2	II	190.5	177.7	165.5	Signif.
1A	2	III	182.8	176.5	175.4	NS
1B	3	I	182.0	179.5	166.7	NS
1C	3	II	193.0	186.3	165.5	NS
1A	3	III	188.4	176.4	175.4	Signif.
1C	4	I	187.6	176.9	177.8	Signif.
1A	4	II	188.4	176.7	159.5	Signif.
1B	4	III	178.8	179.8	175.2	NS
1C	5	I	187.4	175.5	177.8	Signif.
1A	5	II	194.5	180.2	159.5	Signif.
1B	5	III	172.5	174.4	175.2	NS
1C	6	I	187.6	179.8	177.8	NS
1A	6	II	188.4	178.5	159.5	Signif.
1B	6	III	178.8	183.0	175.2	NS

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

Table 40

TEST OF HYPOTHESIS 1b: COMPARISONS OF TOTAL TEST SCORES

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
2B	7	I	174.8	173.9	171.6	NS
2C	7	II	166.7	176.0	148.3	NS
2A	7	III	185.4	175.7	170.6	Signif.
2C	8	I	165.2	161.1	164.0	NS
2A	8	II	178.8	169.5	152.3	NS
2B	8	III	188.7	185.2	178.2	NS

2A = Test based on Haydn's 100th Symphony (second movement - rondo)

2B = Test based on Beethoven's 5th Symphony (second movement - variations)

2C = Test based on Beethoven's 8th Symphony (first movement - sonata)

Table 41

TEST OF HYPOTHESIS 1c: COMPARISONS OF TOTAL TEST SCORES

Test	Comparison	Class	Relevant Subgroups Exper.	Relevant Subgroups Control	Gen'l Control	Significance
1C	9	I	176.9	179.8	177.8	NS
1A	9	II	176.7	178.5	159.5	NS
1B	9	III	179.8	183.0	175.2	NS
2A	10	I	170.0	170.4	168.8	NS
2B	10	II	175.4	186.6	154.8	NS
2C	10	III	170.4	169.0	158.9	NS
2A	11	I	175.6	176.5	168.8	NS
2B	11	II	181.0	187.0	154.8	NS
2C	11	III	159.4	159.7	158.9	NS
2B	12	I	173.9	173.0	171.6	NS
2C	12	II	176.0	160.8	148.3	Signif.
2A	12	III	175.7	175.4	170.6	NS
2B	13	I	177.6	184.0	171.6	NS
2C	13	II	165.8	167.2	148.3	NS
2A	13	III	176.1	176.0	170.6	NS
2C	14	I	161.1	157.7	164.0	NS
2A	14	II	169.5	177.3	152.3	NS
2B	14	III	185.2	173.4	178.2	Signif.

1A = Test based on Haydn's 101st Symphony
(fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony
(second movement - variations)

1C = Test based on Mozart's 40th Symphony
(first movement - sonata)

2A = Test based on Haydn's 100th Symphony
(second movement - rondo)

2B = Test based on Beethoven's 5th Symphony
(second movement - variations)

2C = Test based on Beethoven's 8th Symphony
(first movement - sonata)

Table 42

TEST OF HYPOTHESIS 1d: COMPARISONS OF TOTAL TEST SCORES

Test	Comparison	Class	Relevant Subgroups		Gen'l Control	Significance
			Exper.	Control		
1C	15	I	179.8	175.5	177.8	NS
1A	15	II	178.5	180.2	159.5	NS
1B	15	III	183.0	174.4	175.2	NS
1C	16	I	187.6	187.4	177.8	NS
1A	16	II	188.4	194.5	159.5	NS
1B	16	III	178.8	172.5	175.2	NS
2B	17	I	174.8	177.6	171.6	NS
2C	17	II	166.7	165.8	148.3	NS
2A	17	III	185.4	176.1	170.6	Signif.
2B	18	I	173.0	173.0	171.6	NS
2C	18	II	160.8	160.6	148.3	NS
2A	18	III	175.4	180.3	170.6	NS
2C	19	I	165.2	163.2	164.0	NS
2A	19	II	178.8	181.3	152.3	NS
2B	19	III	188.7	178.5	178.2	NS
2C	20	I	157.7	163.3	164.0	NS
2A	20	II	177.3	169.0	152.3	NS
2B	20	III	173.4	183.7	178.2	NS

1A = Test based on Haydn's 101st Symphony (fourth movement - rondo)

1B = Test based on Haydn's 94th Symphony (second movement - variations)

1C = Test based on Mozart's 40th Symphony (first movement - sonata)

2A = Test based on Haydn's 100th Symphony (second movement - rondo)

2B = Test based on Beethoven's 5th Symphony (second movement - variations)

2C = Test based on Beethoven's 8th Symphony (first movement - sonata)

Table 43

PREFERENCE RANKING OF PROGRAMMATIC AND ABSOLUTE COMPOSITIONS BY CLASS I GROUPED BY TREATMENT

Treatment*	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
R_a	2	1	3	4	5	6
R_b	3	2	1	5	4	6
R_c	3	2	1	5	4	6
R_d	3	1	2	5	4	6
R_e	3	2	1	5	4	6
R_f	1	3	2	5.5	5.5	4
R_g	3	1	2	5	4	6

* See Figure 1 for full explanation of treatment codes. Students in subgroups R_a, R_b, and R_f studied two programed analyses. R_g studied only by conventional means (general control). Students in other subgroups studied one programed analysis.

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov (Orchestral Suite)
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 44

PREFERENCE RANKING OF PROGRAMMATIC AND ABSOLUTE COMPOSITIONS BY CLASS II GROUPED BY TREATMENT

Treatment*	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
R_h	1	3	2	6	4	5
R_i	1	4	2	3	5	6
R_j	1	3	2	4	6	5
R_k	1.5	1.5	4	3	6	5
R_l	1	5	2	4	3	6
R_m	1	3	2	5.5	5.5	4
R_n	1	2	3	4	5	6

*See Figure 1 for full explanation of treatment codes. Students in subgroups R_h, R_i, and R_m studied two programed analyses. R_n studied only by conventional means (general control). Students in other subgroups studied one programed analysis.

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 45

PREFERENCE RANKING OF PROGRAMMATIC AND ABSOLUTE COMPOSITIONS BY CLASS III GROUPED BY TREATMENT

Treatment*	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
R_o	2	3	1	4	5	6
R_p	3	2	1	4	5	6
R_q	3	2	1	4	5	6
R_r	3	2	1	4	6	5
R_s	2	3	1	5	4	6
R_t	3	1.5	1.5	4	5	6
R_u	3	2	1	4	5	6

* See Figure 1 for full explanation of treatment codes. Students in subgroups R_o, R_p and R_t studied two programed analyses. R_u studied only by conventional means (general control). Students in other subgroups studied one programed analysis.

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov (Orchestral Suite)
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 46

PREFERENCE RANKINGS OF PROGRAMMATIC AND ABSOLUTE COMPOSITIONS BY CLASS I GROUPED BY BLOCK*

Block	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
1	2.5	2.5	1	4.5	4.5	6
2	1	3	2	5	4	6
3	2	3	1	5	4	6
4	3	2	1	5	4	6
5	3	1	2	5	4	6
6	2	3	1	6	4	5
7	3	2	1	5	4	6
8	3	1	2	5	4	6
9	3	2	1	6	4	5
10	3	1	2	5	4	6

*Students blocked by score on EMAT (high = 1, low = 10)

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov (Orchestral Suite)
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 47

PREFERENCE RANKINGS OF PROGRAMMATIC AND ABSOLUTE COMPOSITIONS BY CLASS II GROUPED BY BLOCK*

Block	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
1	2	3	1	4	5	6
2	1	2	3.5	5	3.5	6
3	1	2	4	3	5	6
4	1	2	3	4	6	5
5	1	2	3	4	5	6
6	1	2.5	2.5	4	5	6
7	1	3	2	4	5	6
8	1	3	2	4	6	5
9	1	2	3	4	5.5	5.5
10	1	2	4	3	5	6

*Students blocked by score on EMAT (high = 1, low = 10)

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov (Orchestral Suite)
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 48

PREFERENCE RANKINGS OF PROGRAMMATIC AND ABSOLUTE COMPOSITION BY CLASS III GROUPED BY BLOCK*

Block	Ranking					
	P_1	P_2	P_3	A_1	A_2	A_3
1	2.5	2.5	1	4	5	6
2	2	3	1	4.5	4.5	6
3	2	3	1	4	6	5
4	3	2	1	4	5.5	5.5
5	2.5	2.5	1	4	5	6
6	3	2	1	4	6	5
7	2	4	1	3	5	6
8	1	3	2	4	5.5	5.5
9	3	2	1	4.5	4.5	6
10	5	2	1	6	3	4

*Students blocked by score on EMAT (high = 1, low = 10)

P_1: Romeo and Juliet by Tchaikovsky (Concert Overture)
P_2: Die Moldau by Smetana (Symphonic Poem)
P_3: Scheherazade by Rimsky-Korsakov (Orchestral Suite)
A_1: Symphony No. 40 by Mozart (first movement)
A_2: Symphony No. 101 by Haydn (fourth movement)
A_3: Symphony No. 94 by Haydn (second movement)

Table 49

MEAN SCORES BASED ON STUDENTS' PREFERENCES FOR COMPOSITIONS STUDIED BY PROGRAMED ANALYSES VS. CONVENTIONAL MEANS GROUPED BY TREATMENT

Treatment*	Class		
	I	II	III
A	- 0.9	- 1.3	+ 1.7
B	+ 2.5	- 2.9	+ 1.3
C	+ 1.0	- 0.1	+ 0.9
D	- 1.8	+ 2.5	- 1.9
E	+ 0.6	+ 1.2	- 1.7
F	- 1.6	- 1.2	- 0.5

*Convert treatment groups (A....F) as follows corresponding to coding in Figure 1:

Class I $A=R_a$; $B=R_b$; $C=R_c$; $D=R_d$; $E=R_e$; $F=R_f$

Class II $A=R_h$; $B=R_i$; $C=R_j$; $D=R_k$; $E=R_l$; $F=R_m$

Class III $A=R_o$; $B=R_p$; $C=R_q$; $D=R_r$; $E=R_s$; $F=R_t$

Table 50

MEAN SCORES BASED ON STUDENTS' PREFERENCES FOR COMPOSITIONS STUDIED BY PROGRAMED ANALYSES VS. CONVENTIONAL MEANS GROUPED BY BLOCKS

Blocks*	Class		
	I	II	III
1	+ 0.5	- 0.7	- 0.8
2	- 2.0	+ 2.2	- 0.4
3	+ 1.5	- 2.3	- 0.7
4	+ 1.3	- 1.2	+ 0.3
5	+ 1.0	- 0.2	- 1.2
6	+ 1.3	0.0	- 3.5
7	+ 1.2	+ 0.7	+ 2.3
8	- 0.5	- 1.2	+ 2.0
9	- 3.0	+ 1.0	+ 1.0
10	+ 0.7	- 0.3	+ 0.2

*Blocks derived from EMAT scores (high = 1; low = 10)

Table 51

FREQUENCIES OF REACTIONS TO QUESTION REGARDING EASE OF MANIPULATION OF TAPE ADJUNCTS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Easier Than Using Records	13	22%	10	17%	20	33%	43	24%
Just As Easy As Using Records	33	51%	33	55%	24	40%	90	50%
More Difficult Than Using Records	13	22%	17	28%	16	27%	46	26%
Total	59**		60		60		179	

* Only one response was possible for each student.

** One experimental subject in Class I dropped out school at mid-term.

Table 52

FREQUENCIES OF REACTIONS TO QUESTION REGARDING USEFULNESS OF THE PROGRAMS AS A TEACHING TOOL IN LEARNING TO LISTEN TO ASSIGNED COMPOSITIONS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Very Helpful	52	88%	50	83%	53	88%	155	87%
Could Have Learned As Much By Using Records and Other Aids	4	7%	9	15%	5	9%	18	10%
Didn't Learn As Much As If Had Used Records	3	5%	1	2%	2	3%	6	3%
Total	59**		60		60		179	

* Only one response was possible for each student

** One experimental subject in Class I dropped out of school at mid-term.

Table 53

FREQUENCIES OF REACTIONS TO QUESTION REGARDING USEFULNESS OF THE PROGRAMS AS A TEACHING TOOL IN LEARNING DESCRIPTIVE WORDS AND PHRASES RELATING TO MUSICAL MEANINGS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Helpful	52	88%	55	92%	55	92%	162	90%
Not Helpful	1	2%	0	-	2	3%	3	2%
Don't Know	2	4%	0	-	1	2%	3	2%
Other	4	7%	5	8%	2	3%	11	6%
Total	59**		60		60		179	

* Only one response was possible for each student.

** One experimental subject in Class I dropped out of school at mid-term.

Table 54

FREQUENCIES OF REACTIONS TO QUESTION REGARDING THE COMMENSURATE VALUE OF LEARNING OUTCOMES COMPARED TO TIME SPENT STUDYING THE PROGRAMS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Worth the Time Spent	13	22%	16	27%	20	34%	49	27%
Probably Worth Time Spent	37	62%	25	41%	23	38%	85	48%
Not Worth Time Spent	7	12%	9	15%	9	15%	25	14%
Don't Know	1	2%	4	7%	3	5%	8	4%
Other	1	2%	6	10%	5	8%	12	7%
Total	59**		60		60		179	

* Only one response possible for each student

** One experimental subject in Class I dropped out of school at mid-term.

Table 55

FREQUENCIES OF REACTIONS TO QUESTION REGARDING USEFULNESS OF LINE SCORE NOTATION IN TEXT OF PROGRAMS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Definitely Useful	30	51%	20	33%	21	35%	71	39%
Probably Useful	20	34%	32	54%	23	38%	75	42%
Not a Significant Factor	9	15%	8	13%	10	17%	27	15%
Not Helpful	0	-	0	-	3	5%	3	2%
Confusing	0	-	0	-	3	5%	3	2%
Total	59**		60		60		179	

* Only one response was possible for each student.

** One experimental subject in Class I dropped out of school at mid-term.

Table 56

FREQUENCIES OF REACTIONS TO QUESTION REGARDING VALUE OF THE PROGRAMS IN TEACHING STUDENTS TO FOLLOW THE ORCHESTRA SCORE

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Definitely Helped	16	28%	20	33%	20	33%	56	31%
Probably Helped	22	37%	16	27%	21	35%	59	33%
No Effect	21	35%	24	40%	19	32%	64	36%
Total	59**		60		60		179	

* Only one response possible for each student.
** One experimental subject in Class I dropped out of school at mid-term.

Table 57

FREQUENCIES OF REACTIONS TO QUESTION REGARDING EFFECTIVENESS OF PIANO EXCERPTS ON THE TAPE IN POINTING OUT SPECIFIC PATTERNS IN THE COMPOSITION

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Helpful	22	37%	27	45%	21	35%	70	39%
Helpful Some of The Time	31	53%	29	48%	32	53%	92	51%
Could Have Done As Well Without Them	6	10%	4	6%	7	12%	17	10%
Total	59**		60		60		179	

* Only one response possible for each student

** One experimental subject in Class I dropped out of school at mid-term.

Table 58

FREQUENCIES OF REACTIONS TO QUESTION REGARDING FLEXIBILITY OF THE PROGRAMS IN MEETING STUDENTS' NEEDS

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Flexible and Used Them to Advantage	40	68%	40	66%	42	70%	122	68%
Flexible, But Didn't Use Them to Advantage	13	22%	12	20%	12	20%	37	21%
Not Flexible	3	5%	4	7%	5	8%	12	7%
Other	3	5%	4	7%	1	2%	8	4%
Total	59**		60		60		179	

* Only one response was possible for each student.
** One experimental subject in Class I dropped out of school at mid-term.

Table 59

FREQUENCIES OF REACTIONS TO RECOMMENDATIONS THAT PROGRAMED ANALYSES BE A PART OF LEARNING EXPERIENCES IN MUSIC 112

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Recommend; Are Powerful Teaching Devices	24	41%	23	38%	29	48%	76	43%
Recommend for Some Students	34	57%	36	60%	28	47%	98	55%
Do Not Recommend	1	2%	1	2%	3	5%	5	2%
Total	59**		60		60		179	

* Only one response was possible for each student

** One experimental subject in Class I dropped out of school at mid-term.

Table 60

FREQUENCIES OF REACTIONS TO QUESTION REGARDING THE SIZE OF STEPS IN THE TEXT OF THE PROGRAMED ANALYSES

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Just Right	24	40%	34	57%	27	45%	85	47%
Suitable Most of the time	23	39%	18	30%	23	38%	64	36%
Proceeded too rapidly	1	2%	0	-	0	-	1	1%
Proceeded too Slowly	7	12%	5	8%	6	10%	18	10%
Other	4	7%	3	5%	4	6%	11	6%
Total	59**		60		60		179	

* Only one response was possible for each student.

** One experimental subject in Class I dropped out of school at mid-term.

Table 61

FREQUENCIES OF REACTIONS TO QUESTION REGARDING AMOUNT OF TRANSFER FROM PROGRAMED ANALYSES TO OTHER LEARNING SITUATIONS IN MUSIC 112

Reactions*	Class							
	I		II		III		Total	
	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
Transfer Definitely Noticed	32	54%	30	50%	38	63%	100	56%
Amount of Transfer was Negligible	18	31%	17	28%	15	25%	50	28%
Other	9	15%	13	22%	7	12%	29	16%
Total	59**		60		60		179	

* Only one response was possible for each student.

** One experimental subject in Class I dropped out of school at mid-term.

Table 62

FREQUENCIES OF REACTIONS TO QUESTION REGARDING FEATURES OF THE TEXTS OF THE PROGRAMED ANALYSES

Reactions*	Class							
	I (N=59)		II (N=60)		III (N=60)		Total (N=179)	
	N	Per Cent**	N	Per Cent	N	Per Cent	N	Per Cent
Interesting	12	20%	21	35%	20	33%	53	30%
Well-written	24	41%	39	65%	33	55%	96	54%
Covered important material	47	80%	47	78%	42	70%	136	76%
Clear and concise	43	73%	48	80%	42	70%	133	74%
Other	12	20%	8	13%	15	25%	35	20%
Total Responses	138		163		152		453	

* More than one response was possible. Total N's are not equivalent to numbers of students.

** Each percentage is the proportion of experimental students in each class who reacted to the particular listed response. Therefore, of course, the sum of the percentages in each set of horizontal entries does not equal 100.

Table 63

FREQUENCIES OF REACTIONS TO QUESTION REGARDING FEATURES OF THE TAPE ADJUNCTS OF THE PROGRAMED ANALYSES

Reactions*	Class							
	I (N=59)		II (N=60)		III (N=60)		Total	
	N	Per Cent**	N	Per Cent	N	Per Cent	N	Per Cent
Clear Sounds	45	76%	49	82%	52	87%	146	82%
Meaningful References	42	71%	48	80%	39	65%	129	72%
Technically Well-Constructed	45	76%	49	82%	41	68%	135	75%
Minimum Distortion and Noise	41	70%	45	75%	39	65%	125	70%
Other	5	8%	1	2%	4	7%	10	6%
Total Responses	178		192		175		545	

* More than one response was possible. Total N's are not equivalent to numbers of students.

** Each percentage is the proportion of experimental students in each class who reacted to the listed response. Therefore of course, the sum of the percentages in each set of horizontal entries does not equal 100.

APPENDIX B

EXPERIMENTAL MATERIALS

Music 112
Calendar for Experiment
Spring Semester, 1967

January 31	Registration
February 2	Classes Begin
February 7	Administer EMAT (ClassI)
February 8	Administer EMAT (Classes II and III)
February 20	Assign Haydn's 94th, second movement (Class II)
February 20	Assign Mozart's 40th, first movement (Class III)
February 21	Assign Haydn's 101st, fourth movement (Class I)
March 6	Administer test on Haydn's 94th and assign Mozart's 40th, first movement (Class II)
March 6	Administer test on Mozart's 40th and assign Haydn's 101st, fourth movement (Class III)
March 7	Administer test on Haydn's 101st and assign Haydn's 94th, second movement (Class I)
March 16	Administer test on Haydn's 94th and assign Mozart's 40th, first movement (Class I)
March 17	Administer test on Haydn's 101st and assign Haydn's 94th, second movement (Class III)
March 22- April 3	Spring Recess
April 12	Administer test on Haydn's 101st (Class II)
April 12	Administer test on Haydn's 94th (Class III)
April 13	Administer test on Mozart's 40th (Class I)
April 20	Assign program music: Scheherazade, Romeo and Juliet, Die Moldau (Class I)
April 21	Assign program music: same compositions for Class II and Class III
April 27	Administer follow-up test Form N (Class I)
April 28	Administer follow-up test Form P (Class II)
April 28	Administer follow-up test Form O (Class III)
May 4	Administer follow-up test Form P (Class I)
May 5	Administer follow-up test Form O (Class II)
May 5	Administer follow-up test Form N (Class III)
May 11	Administer follow-up test Form O (Class I)
May 12	Administer follow-up test Form N (Class II)
May 12	Administer follow-up test Form P (Class III)
May 18	Administer Preference Form (Class I)
May 19	Administer Preference Form (Classes II and III)
May 23	End of Semester

NOTE

The following statement was read to each class by the instructor when the first assignment sheet for the experimental treatment was distributed. It was hoped that this introduction not only would explain the purpose of the appraisal but also help to reduce possible error from the Hawthorne effect. It was felt that if the instructor made this statement rather than the investigator, the students would not become so sensitive to the manipulated variables than might otherwise be the case. Also note references to evaluation of new equipment and facilities; no mention is made of programed instruction.

TO BE READ BY MUSIC 112 INSTRUCTORS TO CLASSES

Today I am going to make the first of some special listening assignments which I shall give you from time to time in the next few weeks. The purpose of these assignments is two-fold: first, they are an integral part of Music 112 and are intended to broaden your background with respect to music of Western civilization and to develop your listening skills. Secondly, the music department is desirous of assessing the practicality and usefulness of various kinds of listening equipment and facilities. I am sure you have seen the changes taking place on our campus and are aware that the college is moving rapidly into new facilities and buildings which will affect the modes of learning and instruction a good deal in the very near future at Cortland.

It is impossible for the department to appraise certain techniques of instruction, evaluation, and learning without making a systematic study of these procedures and facilities. In this effort we expect the students to become actively involved as well as the faculty.

The music department wishes to consider the usefulness of tape transports as adjuncts to our regular turntable equipment. Some of you, therefore, will be asked to prepare these special assignments by using the tape play-back machinery, and others, the record play-back equipment. Pending the results of the assessment study, we have rented only enough tape decks for 30 students in each section of Music 112 to use for any given assignment. The small random sample of students in this class to listen to the first special listening assignment by means of the tape machinery is shown on your assignment sheet. Students not in this sample will listen to the recordings using the turntable machinery. Individuals will not be permitted to exchange places with students in the other group. Such transfer would destroy the random nature of the two groups and introduce an indeterminate amount of bias in the assessment.

Both listening areas are equipped to give all students an equal opportunity to learn the composition; we are simply concerned with the practicality and efficiency of the tape adjuncts.

I want you to listen to Mozart's 40th Symphony, the first movement (which is in the sonata-allegro design). Note that I am specifying just the first movement of the composition. Listen to the music carefully; I suggest that you use the orchestra score as you listen to the recording. Be prepared to take a listening test on this movement on Monday, March 6. This test will be designed to measure your ability to hear not only the large aspects of the work, but also some of the finer details of the music. This is consistent with the goals of this course, as you know.

Once again, the test covering this listening assignment will be given on March 6th; this will give you approximately ten days to complete this assignment. The test will be entirely objective in structure and will primarily be a listening test. The results of the test will be counted in your final grade which you will receive in Mu 112, of course, but the amount of weight which it will receive is indeterminate at the present time. However, it will not "count" any more than any other class test.

Students who are chosen to listen to the first movement of Mozart's 40th Symphony by means of tape play-back machinery will go to the room in the administration building designated by the sign "Tape Listening Room" on the same floor as the "Record Listening Room". The "Tape Listening Room" is located just opposite the IBM Records Room. Because there are only twelve tape transports in the room, it will be advisable for you to reserve a machine. Reservation sheets are posted in the entry way to the Tape Listening Room. Reservations are not necessary for using the Record Listening Room, but it is advisable to avoid "peak hours".* Both areas will be open from 8:00 AM to 9:00 PM Mondays through Thursdays, 8:00 AM to 5:00 PM on Fridays, and 9:00 AM to 2:00 PM on Saturdays.

*Peak hours -Daily 10:00 AM to 3:00 PM

LISTENING ASSIGNMENT SHEET

Mu 112

Class II March 17, 1967

Special Listening Assignment #3

Composition: Symphony No. 101 in D Major, Haydn
Fourth Movement Only

Note: All students except those listed below are to listen to the composition in the Record Listening Room. The students listed below have been randomly selected from the class to listen to the composition in the Tape Listening Room. It is important that individuals do not exchange places between the groups, for that will destroy the randomness of the student sample. Note that the names below are not the same as those listed for the second assignment.

TAPE LISTENING ROOM (North corridor of Adm. Buildin, Room 231A):

1. Battey, Valerie
2. Bierman, Virginia
3. Blick, Judith
4. Booker, Patricia A.
5. Brodow, Nancy
6. Brown, Carol
7. Busher, Janet
8. Claus, Linda
9. Danley, John
10. Franklin, Gerry
11. Fruscello, Nick
12. Ledingham, Linda
13. Lipp, Marcia
14. Milles, Nancy
15. Moran, Elizabeth
16. Mosher, Carol
17. Pisik, Pamela
18. Reich, Janet
19. Reichers, Dorothea
20. Sandfield, Madeline
21. Sehulster, Jean
22. Seydel, Victoria
23. Shillman, Sara
24. Spisak, Jessica
25. Strandfeldt, Fredrika
26. VanNess, James
27. Walton, Judith
28. Weiss, Andra
29. Whicher, Nancy
30. Witko, Sandra

RECORD LISTENING ROOM (South corridor of Adm. Building, Room 202):

Students whose names are not included in the random sample above will use the equipment and facilities in the Record Listening Room.

Mu 112
Class II March 17, 1967

LISTENING ROOM HOURS

Both rooms will be open for listening during the following hours:

Monday through Thursday - 8:00 AM to 9:00 PM

Friday - 8:00 AM to 5:00 PM

Saturday - 9:00 AM to 2:00 PM

RESERVING MACHINES

Students who are expected to use the Tape Listening Room are strongly advised to reserve a machine. The reservation sheets will be found in the entry-way to the Tape Listening Room (231A). Students using the Record Listening Room will not be required to reserve a machine: however, it is advisable to avoid the "peak hours" of 10:00 AM to 3:00 PM daily as much as possible.

Another word of caution: Arrange to listen to the composition as soon as you can. You may discover that you needed more time to become familiar with the music than you had planned. It may be impossible to obtain listening-room space if you postpone the completion of the assignment until a day or so before the test (to be given Wednesday, April 12th).

Please Note: As a part of the music department assessemnt of the listening equipment and facilities, you will be requested to fill out a short data sheet each time you visit either listening room. The information on these forms will not be used to evalute your progress in Mu 112. The data will be of interest to the music department office only. The room supervisors will be responsible for distributing and collecting these forms.. Your cooperation is solicited.

LISTENING ASSIGNMENT SHEET
FOR
PROGRAMMATIC WORKS

MU 112 Class I

The following compositions will form the basis for a listening test to be given approximately one week prior to the end of the semester. Follow the orchestral score for each of the compositions as you listen: note how the orchestra is used in each work, their forms, use of themes, melodic and rhythmic structures, etc.

Multiple copies of the records and scores are in the record listening room. Scores can be obtained from the room supervisor at the desk.

1. Romeo and Juliet - Tschaikowsky
2. Die Moldau - Smetana
3. Scheherazade - Rimsky-Korsakoff (especially the Young Prince and the Young Princess movement)

RECORD LISTENING ROOM HOURS:

Monday through Thursday - 8:30 AM to 5:00 PM, 7:00PM to 9:00 PM

Friday - 8:30 AM to 5:00 PM

Saturday - 9:00 AM to 12:00 NOON

.iu 112
LISTENING TEST Test Number______
on the
Fourth Movement of
Symphony No. 101 in D Major by Haydn
and the
Rondo Design

- Part A -

Read these directions carefully

In Part A you will answer questions based on recorded excerpts. During this part of the test, you will be given time to look over the items based on the recorded excerpts before you hear the music in order to orient yourself properly. After you have answered the items, you will hear the musical excerpts again so that you can review your responses.

All excerpts are recorded on tape and are spaced at optimum time intervals to give you sufficient time to record your response on the answer sheet. Once the tape has been started, it will not be stopped, so it is important that you listen carefully because, in most instances, each excerpt will only be played twice.

Most of the questions in Part A are in the form of "true-false" items. Every time that true-false items are presented, you are to answer them in the following way:

If you are confident that the statement is true, blacken the space numbered "1".

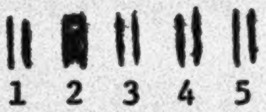
If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly false, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

As an illustration, a response marked the following way on the answer sheet means that the student believes the statement is possibly true (i.e. he is not absolutely sure of his knowledge):



Do not make your answers on the questionnaire: rather, record all your responses on the answer sheet. Be sure to erase all stray pencil marks or undesired responses thoroughly: answer sheets will be scored electronically.

Important: In order to be called true, an item must be correct in all its aspects. Therefore, an item which is partly true and partly false must be considered to be a false statement.

Caution: It is inadvisable to return to items in any group of Part A for the purpose of altering your responses after musical excerpts for succeeding groups of items have intervened. Your memory for sounds of excerpts for earlier groups probably should not be relied upon for a cue.

The following sample group of excerpts and items is presented to illustrate the procedure to be followed for Part A. Answer the items on the answer sheet (1 and 2) and them compare your responses with the responses given you afterwards on the tape. After the sample group is completed, we shall proceed with Part A.

SAMPLE GROUP (true or false) One excerpt

1. Most of the rapid scale work in the strings and woodwinds is ascending rather than descending.

2. This excerpt is scored for full orchestra.

We shall now proceed with the first group of Part A (Group a). Because we have used items 1 and 2 for the Sample Group, begin with item 3 on the answer sheet.

Group a (true or false) Two excerpts

3. The main rhythmic feature of the first excerpt is also heard in the second excerpt.

4. (This is true: the second excerpt has two different rhythmic patterns.) True or false: The first excerpt has one.

Group b (true or false) One excerpt

5. The pattern of the excerpt in terms of letter-labels is a a b a b a.

6. The excerpt is played by the string section of the orchestra.

Group c (true or false) Two excerpts

7. The melodies of both excerpts remain in the same key throughout.

8. Both excerpts are in the major mode.

9. Both excerpts begin on the same key center.

Group d (true or false) Two excerpts

10. The two excerpts have a common rhythmic fragment.

11. Both excerpts are in the same mode.

12. Both excerpts have the same key center.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group e (true or false) Two excerpts

13. Both excerpts are in the same key.

14. There is a melodic relationship between the excerpts.

15. Two melody lines sound simultaneously in the second excerpt.

Group f (true or false) Two excerpts

16. The excerpts have the same key center.

17. The rhythm of the melody in the second excerpt is similar to the rhythm of the melody in the first excerpt.

18. The second excerpt is a variation of the melody of the first excerpt.

Group g (true or false) One excerpt

19. This excerpt is a good example of contrapuntal style.

20. The main melody line is repeated in this excerpt.

Group h (true or false) Two excerpts

(These excerpts will be preceded by a few measures from the main theme to help you establish it in your mind.)

21. The first excerpt is the conclusion of the movement.

22. Both excerpts include melodic fragments from the rondo theme.

23. Both excerpts include rhythmic fragments from the rondo theme.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group i   (true or false)   Two excerpts

24. These two excerpts are exactly alike melodically.

25. These two excerpts are scored for the same instruments.

26. Both excerpts are scored for string and woodwind instruments.

Group j   (true or false)   One excerpt

27. The excerpt is in the major mode.

28. Staccato chords are placed in contrast to the melody line.

Group k   (true or false)   One excerpt

29. The excerpt can be indentified as two parallel sentences.

30. The excerpt is scored for strings and woodwinds.

Group l   (true or false)   Two excerpts

31. Both excerpts have the same melody line.

32. Both excerpts are in the same rhythm.

33. Both excerpts are scored for the same instruments.

Group m   (true or false)   One excerpt

34. The melody line is carried by the violins and flutes.

35. The melody can be described as having a smooth and flowing line rather than being disjunct.

36. The excerpt is thinly orchestrated.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group n (true or false) One excerpt

(Note: Part a and part b of the rondo theme are played first to help you keep them in mind only. The items deal only with the excerpt which follows.)

37. The excerpt is closely related rhythmically to part a of the theme.

38. The excerpt is closely related melodically to part a of the theme.

39. The excerpt is closely related melodically to part b of the theme.

Group o (true or false)

(For each of the following items, two excerpts will be played through once: they will not be repeated. Your task is to determine whether or not they are related RHYTHMICALLY. If you believe they are, mark the item "true". If you believe they are not, mark the item "false".

40. Excerpt 1
    Excerpt 2

41. Excerpt 1
    Excerpt 2

42. Excerpt 1
    Excerpt 2

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group p (multiple choice) One excerpt

Directions: In the following excerpt, a melodic fragment consisting of the first three notes of the rondo theme is presented. Haydn uses this fragment three times in sequence - - one right after the other - - within this excerpt.

Each of the three times the fragment appears in the excerpt, Haydn gives it to different instruments. Our problem will be to determine which instruments play the fragment first, second, and third in that order in the excerpt.

The following procedure will be followed:

1. First, the piano will play the excerpt without the accompanying music so that the fragments will stand out clearly. Reference to each time the fragment appears will be made by the letters a,b, and c called out on the tape.

2. The orchestra excerpt with the same lettered reference will be played next. Because the music moves at such a fast tempo, we shall start a few measures ahead of the point that the fragments begin to appear. This lettered orchestra reference will be repeated.

3. Lastly, the orchestra excerpt beginning immediately with the first of the fragments will be played three times. During these playings, there will be time for you to make the responses called for below.

Note: Only one answer is correct for each item.

43. The fragment is played first in the sequence by which one group of instruments?

1. oboes
2. bassoons
3. flutes
4. clarinets
5. horns

44. The fragment is played second in the sequence by which one group of instruments?

1. oboes
2. bassoons
3. flutes
4. clarinets
5. horns

45. The fragment is played third in the sequence by which one group of instruments?

1. oboes	4. clarinets
2. bassoons	5. horns
3. flutes	

- Part B -

Multiple Choice

Directions:

Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period. It is not advisable to return to Part A to review your answers because your memory of the musical cues probably is faulty. However, you may review Part B.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. you are certain that the best answer is one of those two), it may be profitable for you to guess. In other cases, the odds may be against you.

46. The fugue in the fourth movement of Haydn's 101st Symphony is classified as a double fugue. This name is used to describe the structure because:

1. There are two themes or subjects.
2. It is twice as long as the ordinary fugue.
3. Two sections of the orchestra play the theme.
4. The theme doubles back on itself after the first Presentation.
5. The tempo of the fugue is twice as fast as it was presented in the first presentation of the theme at the beginning of the movement.

47. The term "rondo" for the form of a composition such as the fourth movement of Haydn's 101st Symphony means that the form is characterized by:

1. variations built from a central thematic idea.
2. two or more themes played simultaneously in the form of a round or canon.
3. a main theme and a subordinate theme which are developed and varied to form a ternary structure.
4. a central theme alternated with two or more secondary themes.
5. episodic material.

48. The function of the theme in a rondo design is to:

1. establish a central idea as a means for unifying the work for the listener.
2. lend contrasting effects to the digressions.
3. give the listener variety as he perceives the unfolding of the entire pattern.
4. enable the listener to sense the direction that the composer is taking as he builds the design.
5. create interesting effects in order to prevent the work from stagnating as the shaping forces interact.

49. The most important defining characteristic of the section called the coda is that it is:

1. a short development section designed to suggest or hint at further possibilities of treating thematic material.
2. written in the manner of a modulation to return the composition to the key in which the work was begun.

3. a contrasting section to highlight the difference between thematic and non-thematic material.

4. a miniature development section meant to suggest new ideas for treatment of non-thematic material.

5. constructed of thematic ideas in the manner of a summary or conclusion.

50. An episode in a rondo design can best be defined as:

    1. an exposition of the subordinate theme.

    2. a contrasting section to the rondo theme.

    3. a bridge between statements of the rondo theme.

    4. a restatement of the rondo theme.

    5. a modulatory passage moving from one main section in a given key to another in a different key.

51. Of the criteria listed below, which is probably the best indicator that you are listening to a composition written in the rondo design?

    1. The fast and lively tempo.

    2. The special use of transitions and bridging material.

    3. The unique arrangement of themes.

    4. The sparing use of theme variation.

    5. The absence of any development of thematic material.

52. A rondo pattern is allied in principle to the basic ternary form since the ternary form, like the rondo,

1. may be a part of a larger, multi-movement work (like a symphony).
2. usually has a simply-constructed melodic line for its theme.
3. features a return to the first theme after a digression.
4. has three main parts.
5. had its beginnings in the old poetic forms of the sixteenth and seventeenth centuries.

53. Which of the respones below best fits the kind of preparation you made for this test (Haydn's 101st Symphony in D Major, fourth movement)?

1. I didn't listen to the composition at all.
2. I listened to the composition in one of the listening rooms (tape or record).
3. I have the record at home: I listened to it there.
4. I listened to it where I room (dormitory, fraternity, sorority, rooming house, apartment, etc.).
5. Other.

AUDIO EXCERPTS FOR LISTENING TEST BASED ON HAYDN'S 101st (FOURTH MOVEMENT)

Group	Excerpt Number	Measure Numbers
Sample	1*	238-249 (plus 1 beat)
a	1	66-73
	2	158-163 (plus 1/2 beat)
b	1*	1-28
c	1	1-8
	2	189-197 (plus 1 beat)
d	1	138-145 (plus 1 beat)
	2	110-118
e	1	1-8
	2	62-69
f	1	1-8
	2	131 (with pick-up) - 137 (plus 1 beat)
g	1*	205-217
h	1	180-188
	2	271-280
i	1	1-8
	2	250-257
j	1*	66-72 (plus 1 beat)
k	1*	1-8
l	1	110-118
	2	1-8
m	1*	94-102

*Only one excerpt used

HAYDN'S 101st (FOURTH MOVEMENT)

- 2 -

Group	Excerpt Number	Measure Numbers
n	1	1-8
	2	9-19 (plus 1 beat)
	3	94-102
o	1 (item 40)	9-19 (plus 1 beat)
	2	164-171
	1 (item 41)	40-47
	2	94-102
	1 (item 42)	189-198
	2	250-257
p	1	1-4
	2	220-225

SCORING KEY
for test on
Rondo form and fourth movement of Haydn's 101st Symphony

	Alternative							Alternative					
Item	1	2	3	4	5	Subtest*	Item	1	2	3	4	5	Subtest
3	5	4	3	2	1	4	28	1	2	3	4	5	1
4	1	2	3	4	5	4	29	5	4	3	2	1	2
5	1	2	3	4	5	2	30	1	2	3	4	5	5
6	5	4	3	2	1	5	31	5	4	3	2	1	3
7	1	2	3	4	5	1	32	5	4	3	2	1	4
8	5	4	3	2	1	1	33	1	2	3	4	5	5
9	5	4	3	2	1	1	34	5	4	3	2	1	5
10	5	4	3	2	1	4	35	1	2	3	4	5	3
11	1	2	3	4	5	1	36	5	4	3	2	1	5
12	5	4	3	2	1	1	37	1	2	3	4	5	4
13	1	2	3	4	5	1	38	1	2	3	4	5	3
14	5	4	3	2	1	3	39	5	4	3	2	1	3
15	1	2	3	4	5	3	40	1	2	3	4	5	4
16	5	4	3	2	1	1	41	1	2	3	4	5	4
17	1	2	3	4	5	4	42	5	4	3	2	1	4
18	5	4	3	2	1	2	43	5	1	1	1	1	5
19	5	4	3	2	1	3	44	1	5	1	1	1	5
20	5	4	3	2	1	3	45	1	1	1	1	5	5
21	1	2	3	4	5	1	46	5	1	1	1	1	2
22	1	2	3	4	5	3	47	1	1	1	5	1	2
23	5	4	3	2	1	4	48	5	1	1	1	1	2
24	5	4	3	2	1	3	49	1	1	1	1	5	2
25	5	4	3	2	1	5	50	1	5	1	1	1	2
26	1	2	3	4	5	5	51	1	1	5	1	1	2
27	5	4	3	2	1	1	52	1	1	5	1	1	2

*Subtest codes:

1	Harmony and tonality
2	Knowledge of form
3	Melody
4	Rhythm
5	Timbre

Mu 112

LISTENING TEST   Test Number______
on the
Second Movement of
Symphony No. 94 in G Major by Haydn
and the
Theme and Variations Form

- Part A -

Read these directions carefully

In Part A you will answer questions based on recorded excerpts. During this part of the test, you will be given time to look over the items based on the recorded excerpts before you hear the music in order to orient yourself properly. After you have answered the items, you will hear the musical excerpts again so that you can review your responses.

All excerpts are recorded on tape and are spaced at optimum time intervals to give you sufficient time to record your response on the answer sheet. Once the tape has been started, it will not be stopped, so it is important that you listen carefully because, in most instances, each excerpt will only be played twice.

Most of the questions in Part A are in the form of "true-false" items. Every time that true-false items are presented, you are to answer them in the following way:

If you are confident that the statement is true, blacken the space numbered "1".

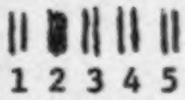
If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly false, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

As an illustration, a response marked the following way on the answer sheet means that the student believes the statement is possibly true (i.e. - he is not absolutely sure of his knowledge).



Do not make your answers on the questionnaire; rather, record all your responses on the answer sheet. Be sure to erase all stray pencil marks or undesired responses thoroughly; answer sheets will be scored electronically.

Important: In order to be called true, an item must be correct in all its aspects. Therefore, an item which is partly true and partly false must be considered to be a false statement.

Caution: It is inadvisable to return to items in any group of Part A for the purpose of altering your responses after musical excerpts for succeeding groups of items have intervened. Your memory for sounds of excerpts for earlier groups probably should not be relied upon for a cue.

The following sample group of excerpts and items is presented to illustrate the procedure to be followed for Part A. Answer the items on the answer sheet (1, 2, and 3) and then compare your responses with the responses given you afterwards on the tape. After the sample group is completed, we shall proceed with Part A.

SAMPLE GROUP (true or false) Two excerpts

1. Both excerpts are closely related rhythmically.

2. Both excerpts are closely related melodically.

3. The melodies of both excerpts are identical.

We shall now proceed with the first group of Part A (Group a). Because we have used items 1, 2, and 3 for the Sample Group, begin with item 4 on the answer sheet.

Group a (true or false) Two excerpts

4. The melody of the first excerpt and the melody of the second excerpt are played by stringed instruments.

5. The harmonies (underlying chord structures) of both excerpts sound the same.

6. The melody of the second excerpt is supported by sustained chords.

Group b (true or false) One excerpt

7. The rhythm of the accompaniment in the high voices of the orchestra contrasts with the rhythm of the melody.

8. This excerpt is in the major mode.

9. The chief feature of this variation is the rhythmic alteration of the theme.

Group c (true or false) One excerpt

(Note: concentrate particularly on the heavy chords in this excerpt.)

10. The heavy chords are played by the brass instruments of the orchestra.

11. The heavy chords fall on the beat.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group d (true or false) Two excerpts

(Note: The excerpts are portions of two separate variations of the theme.)

12. The first excerpt emphasizes a change in rhythm of the theme more than a change in the melodic line of the theme.

13. The second excerpt emphasizes a change in rhythm of the theme more than a change in the melodic line of the theme.

14. Both of the excerpts are variations of the same sentence of the theme.

Group e (true or false) Two excerpts

(Note: The first excerpt is the first phrase of the theme and is played only to help you keep it in mind as you answer the questions. The questions have reference to the second excerpt.)

15. Most of the melodic line of the second excerpt follows a chord pattern (arpeggio) rather than a scale pattern.

16. Portions of the second excerpt are related to the rhythmic structure of the theme.

17. The second excerpt is a part of one of the variations of the theme.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group f (true or false) Two excerpts

18. Both excerpts are from the same variation of the theme.

19. Both excerpts are variations of the same sentence of the theme.

20. Each excerpt has only two separate melodic features.

Group g (true or false) Two excerpts

21. The second excerpt is in the same mode as the first excerpt.

22. The second excerpt has the same melodic contour as the first excerpt.

23. The second excerpt is a variation of the first excerpt.

Group h (true or false) Two excerpts

24. Both excerpts are variations of the same sentence of the theme.

25. The second excerpt is a rhythmic variation of the theme.

26. The second excerpt features contrasting melodic lines.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group i   (true or false)   Two excerpts

(Note: The first excerpt is a portion of the theme. The second excerpt is a portion of a variation.)

27. Haydn's scheme for this variation of the theme is to repeat each note of the theme four times.

28. In the second excerpt the accompanying rhythmic figures are played by woodwind instruments.

29. The second excerpt is in the minor mode.

Group j   (true or false)   Two excerpts

30. The rhythm of the ascending motives of the phrases in both excerpts is a sharp contrast to the descending motives.

31. In both excerpts, there is an off-the-beat stress played by the lower voices.

32. Both excerpts are in the minor mode.

Group k   (true or false)   One excerpt

33. The woodwinds play in unison rather than in harmony with each other.

34. Even though each of the scales does not begin on the same pitch, they are major scales.

Remember answering code

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group l (true or false) One excerpt

35. The main melodic feature in the high voices of the orchestra is a series of descending scales.

36. Even though each of the scales does not begin on the same pitch, they are major scales.

Group m (multiple choice) Two excerpts

(Note: Both of the excerpts are taken from one of the variations of the second movement of Haydn's Symphony No. 94. Choose the correct response from the following five choices.)

37. The only difference between these two excerpts is that in the second excerpt:

1. the horns play sustained tones and arpeggios.
2. the double basses have been given a series of tones following the pulse of the meter.
3. the flute part in the first excerpt has been omitted.
4. All of the changes in the three responses above occur in the second excerpt.
5. None of the changes in the three responses above occurs in the second excerpt.

Remember answering code for true-false items:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

__Group n__ (multiple choice)

__Directions:__ In each of the items below (38-42), you are to identify the instrument which plays the orchestra excerpt. However, you are to decide which instrument plays only the melodic line identified for you (from the excerpt) by the piano. The piano will play only the melodic line for you first so that you will be sure to know the part to which reference is being made. Immediately following, the orchestra excerpt will be played. From the list below each item, choose the one you believe to be the correct response and blacken the corresponding number of that instrument on the answer sheet. Only one of the choices offered is correct: do __not__ make more than one response to each item. Each piano and orchestra reference will be played twice to give you sufficient time to respond.

38. The one instrument which plays EXCERPT ONE is:

    1. flute
    2. oboe
    3. clarinet
    4. bassoon
    5. violin

39. The one instrument which plays EXCERPT TWO is:

    1. flute
    2. oboe
    3. clarinet
    4. bassoon
    5. violin

40. The instruments which play EXCERPT THREE are:

    1. flute and clarinet
    2. bassoon and oboe
    3. violin and flute
    4. flute and oboe
    5. oboe and clarinet

- TURN PAGES QUIETLY -

41. The instruments which play EXCERPT FOUR are:

1. upper strings and lower strings
2. flutes, oboes and clarinets
3. horns, lower strings
4. flutes, oboes, bassoons, upper and lower strings
5. oboes and lower strings.

42. The instruments which play EXCERPT FIVE are:

1. oboes
2. flutes
3. violins
4. bassoons
5. clarinets

Group o (multiple choice)

Directions: A simple, short theme will be played for you. Following the theme, for each of the three items below, a different variation of the theme will be played. Your problem is to determine what dimension or dimensions of the music has (have) been varied in each case. For each item, the theme will be played once, followed by two playings of the variation. There is only one correct answer in any one variation so select just one response for each item.

Remember, the theme will be played for you once to acquaint you with its basic structure. Then, for each item below the theme will be presented again followed by two playings of the variation. Select your response from the list of choices below each item and blacken the corresponding number on the answer sheet.

43. The basic feature of the theme which has been varied in the FIRST VARIATION of the theme is (select one response only):

1. melody
2. mode
3 rhythm
4. melody, mode and rhythm
5. melody and mode

44. The basic feature of the theme which has been varied in the SECOND VARIATION of the theme is (select one response only):

1. melody
2. mode
3. rhythm
4. mode and rhythm
5. melody and mode

45. The basic feature of the theme which has been varied in the THIRD VARIATION of the theme is (select one response only):

1. melody
2. mode
3. rhythm
4. mode and rhythm
5. melody and mode

- Part B -

Multiple Choice

Directions:

Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period. It is not advisable to return to Part A to review your answers because your memory of the musical cues probably is faulty. However, you may review Part B.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. - you are certain that the best answer is one of those two), it may be profitable for you to guess. In other cases, the odds may be against you.

46. In a theme and variations design, does an introduction to the composition play an important role?

    1. Yes, because the introduction exposes short sketches of the kinds and characters of the variations to be expected.

    2. Yes, because the introduction is the statement of the theme, it is a vital part of the complete pattern.

    3. No, because it is simply a section in order to make a smooth transition from one movement to the variations movement.

    4. No, because it is not uniquely a critical feature of the pattern, although it is important musically.

    5. Yes, since the introduction contains the basic plan in miniature for the entire pattern to be followed as the work unfolds.

47. Which of the following patterns is NOT in the binary form?

1. A B A
2. A A B
3. A B B
4. A A B B
5. A B A B

48. A basic difference between the concept of development and variation in a musical composition is that in a development a new pattern may be created from a figure or motive of the theme whereas a variation is normally:

1. a combination of more than one figure from the theme presented in a contrapuntal texture.
2. a melodic ornamentation of thematic material.
3. a combination of thematic and bridging material.
4. a new pattern created from a musical idea based on contrasting melodic structures not related necessarily to the theme.
5. an alteration of the complete theme.

49. The basic purpose for working from a central theme in a "theme and variations" design is to:

1. establish unity.
2. maintain a supporting line for the harmonic structure.
3. develop a contrasting dimension to balance against the variations.
4. present a simple but beautiful melody to help the listener find a melodic pattern.
5. present a melodic introduction for the variations.

50. Your program lists a symphony to be played which was composed by a contemporary of Haydn. The work is entitled Symphony No. 2 in C Major. The fourth movement is in a theme and variations design. Which of the following situations would be most probable concerning the fourth movement?

1. The theme is in a major key closely related to C Major: the variations are pitched in randomly selected major keys.
2. The movement is in a minor key. The variations will probably be in a minor key also.
3. The theme is in C Major: one or more of the variations could be in another key or mode.
4. The theme is pitched in G Major, the dominant of C Major. Variations are pitched in C Major.
5. The theme is pitched in g minor (dominant minor of C Major) and the variations are pitched in closely related minor keys.

51. If a printed program for a concert listed a composition entitled Variations on a Theme by Bach by Johann Pizzicato, you would know that:

1. Bach probably wrote variations on the theme but Pizzicato had written new ones to replace Bach's originals.
2. Pizzicato built the variations on a theme which he had composed in the style of Bach.
3. Bach composed the theme and the variations: Pizzicato had orchestrated (scored) it for this particular concert.
4. Bach and Pizzicato collaborated on the work.
5. Bach composed the theme: Pizzicato had composed the variations based on the theme.

52. Ornamenting a theme is a form of variation. Of the following, which would most likely be the changes employed to accomplish this?

    1. Harmonic alterations.

    2. Melodic changes

    3. Orchestration modification

    4. Key change

    5. A combination of all the above.

53. Which of the following would probably be the most important consideration for a composer to heed in order to decide how many variations to compose in a theme and variations design?

    1. Symmetry of the total form.

    2. The amount of time it takes to perform the work

    3. Whether or not the composition is a part of a larger work.

    4. The number of instruments in the orchestra.

    5. The skill of the composer.

54. Which of the responses below best fits the kind of preparation you made for this test (Haydn's 94th Symphony in G Major, second movement)?

    1. I didn't listen to the composition at all

    2. I listened to the composition in one of the listening rooms (tape or record).

    3. I have the record at home: I listened to it there.

    4. I listened to it where I room (dormitory, fraternity, sorority, rooming house, apartment, etc.).

    5. Other

AUDIO EXCERPTS FOR LISTENING TEST BASED ON HAYDN'S 94th (SECOND MOVEMENT)

Group	Excerpt Number	Measure Numbers
Sample	1	1-4
	2	5-8
a	1	1-4
	2	145-148
b	1*	75-82
c	1*	107-114
d	1	75-82
	2	115-122
e	1	1-4
	2	70-74
f	1	33-36 (plus 1/2 beat)
	2	41-44 (plus 1/2 beat)
g	1	1-4
	2	49-52
h	1	75-82
	2	83-90
i	1	1-8
	2	75-82
j	1	115-118
	2	119-122
k	1*	91-98
l	1*	57-60
m	1	91-98
	2	99-106

*Only one excerpt used

HAYDN'S 94th (SECOND MOVEMENT)

- 2 -

Group	Excerpt Number	Measure Numbers
n	1	75-78
	2	41-44
	3	83-86 (plus 1 beat)
	4	49-52
	5	57-60

o A simple four-measure theme followed by three variations based on the theme were the audio cues for this group. (These were constructed specifically for the item; they were not excerpts from Haydn's symphony.)

SCORING KEY
for test on Theme and Variations and second movement of Haydn's 94th Symphony

	Alternative							Alternative					
Item	1	2	3	4	5	Subtest*	Item	1	2	3	4	5	Subtest
4	1	2	3	4	5	5	29	1	2	3	4	5	1
5	1	2	3	4	5	1	30	5	4	3	2	1	4
6	5	4	3	2	1	1	31	5	4	3	2	1	4
7	1	2	3	4	5	4	32	1	2	3	4	5	1
8	5	4	3	2	1	1	33	1	2	3	4	5	1
9	5	4	3	2	1	4	34	1	2	3	4	5	5
10	1	2	3	4	5	5	35	5	4	3	2	1	3
11	1	2	3	4	5	4	36	1	2	3	4	5	1
12	5	4	3	2	1	4	37	5	1	1	1	1	5
13	1	2	3	4	5	4	38	1	5	1	1	1	5
14	5	4	3	2	1	3	39	1	1	1	1	5	5
15	5	4	3	2	1	1	40	1	1	1	5	1	5
16	5	4	3	2	1	4	41	1	1	1	5	1	5
17	1	2	3	4	5	2	42	1	1	5	1	1	5
18	5	4	3	2	1	3	43	5	1	1	1	1	3
19	1	2	3	4	5	3	44	1	1	5	1	1	4
20	5	4	3	2	1	3	45	1	1	1	5	1	1
21	1	2	3	4	5	1	46	1	1	1	5	1	2
22	5	4	3	2	1	3	47	5	1	1	1	1	2
23	5	4	3	2	1	2	48	1	1	1	1	5	2
24	5	4	3	2	1	3	49	5	1	1	1	1	2
25	1	2	3	4	5	3	50	1	1	5	1	1	2
26	5	4	3	2	1	3	51	1	1	1	1	5	2
27	1	2	3	4	5	4	52	1	5	1	1	1	2
28	1	2	3	4	5	5	53	5	1	1	1	1	2

*Subtest codes:

1	Harmony and tonality
2	Knowledge of form
3	Melody
4	Rhythm
5	Timbre

Mu 112

LISTENING TEST

Test Number_______

on the
First Movement of
Symphony No. 40 in g minor by Mozart
and the
Sonata-Allegro Form

-Part A-

Read these directions carefully

In Part A you will answer questions based on recorded excerpts. During this part of the test, you will be given time to look over the items based on the recorded excerpts before you hear the music in order to orient yourself properly. After you have answered the items, you will hear the musical excerpts again so that you can review your responses.

All excerpts are recorded on tape and are spaced at optimum time intervals to give you sufficient time to record your response on the answer sheet. Once the tape has been started, it will not be stopped, so it is important that you listen carefully because, in most instances, each excerpt will only be played twice.

Most of the questions in Part A are in the form of "true-false" items. Every time that true-false items are presented, you are to answer them in the following way:

If you are confident that the statement is true, blacken the space numbered "1".

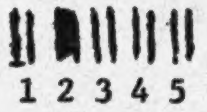
If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly false, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

As an illustration, a response marked the following way on the answer sheet means that the student believes the statement is *possibly* true (i.e. he is not absolutely sure of his knowledge):



Do not make your answers on the questionnaire: rather, *record all your responses on the answer sheet*. Be sure to erase all stray pencil marks or undesired responses thoroughly: answer sheets will be scored electronically.

Important: In order to be called *true*, an item must be correct in all its aspects. Therefore, an item which is *partly* true and *partly* false must be considered to be a false statement.

Caution: It is inadvisable to return to items in any group of Part A for the purpose of altering your responses *after* musical excerpts for succeeding groups of items have intervened. Your *memory* for sounds of excerpts for earlier groups probably should not be relied upon for a cue.

The following sample group of excerpts and items is presented to illustrate the procedure to be followed for Part A. Answer the items on the answer sheet (1, 2 and 3) and then compare your responses with the responses given you afterwards on the tape. After the sample group is completed, we shall proceed with Part A.

SAMPLE GROUP (true or false) Two excerpts

1. Most of the first excerpt includes a larger number of instruments of the orchestra than the second excerpt.
2. The excerpts differ in that they are played at different dynamic levels.
3. The first excerpt and the second excerpt represent different parts of the main theme.

We shall now proceed with the first group of Part A (Group a). Because we have used items 1, 2, and 3 for the Sample Group, begin with item 4 on the answer sheet.

Group a (true or false) One excerpt

4. The strings enter first: they are joined by woodwinds for the remainder of the excerpt.

5. The melody line features an ascending progression of tones.

6. Woodwinds play alone at one part of the excerpt.

Group b (true or false) Two excerpts

7. The first excerpt is in the major mode, the second is in the minor mode.

8. The two excerpts have the same key center.

Group c (true or false) Two excerpts

9. The rhythmic patterns of the accompaniment to the melodies of both excerpts contrast with the rhythmic patterns of the melodies themselves.

10. Both excerpts are in the minor mode.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group d (true or false) Two excerpts

(The first excerpt is the first phrase of the main theme played by the piano. The reason this is played first is to be sure you have in mind the melody of the main theme. The second excerpt is played by the orchestra. Questions 11, 12, and 13 refer to the second excerpt only.)

11. The melody of the second excerpt has the same rhythmic pattern as the melody of the theme.

12. The second excerpt is a part of the development section.

13. There is more than one rhythmic idea in the second excerpt.

Group e (true or false) Two excerpts

14. Both excerpts are in the minor mode.

15. The central rhythmic ideas of both excerpts differ.

16. The melodic structure of the second excerpt features a general pattern of scales and arpeggios.

Group f (true or false) One excerpt

17. The excerpt comes from the exposition section of the movement.

18. (This is true: there is a sustained sound which extends throughout most of the excerpt.) True or false: the sustained sound is played in unison by the instruments on one pitch rather than as a chord.

19. The excerpt is shaped in the form of a dialogue between two groups of instruments each using the SAME FRAGMENTS of the main theme.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group g (true or false) Two excerpts

20. Both excerpts are in the major mode.

21. The same instruments carry the melodic line in both excerpts.

22. The rhythm of the ACCOMPANIMENT to the melody line in both excerpts is the same.

Group h (true or false) Two excerpts

23. The first excerpt is in the minor mode: the second excerpt is in major.

24. Sustained chords support the melody lines of both excerpts.

25. The melody of the second excerpt is the same as the melody of the first excerpt.

Group i (true or false) Two excerpts

26. The melody of the second excerpt is the same as the melody of the first excerpt even though the excerpts are in different keys.

27. The key and mode of the first excerpt remain constant from the beginning of the excerpt to its conclusion.

28. The key and mode of the second excerpt remain constant from the beginning of the excerpt to its conclusion.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY _

Group j (true or false) Two excerpts

29. The scoring for both excerpts includes high woodwinds as well as the upper strings.

30. The contours of the melody line in the first and second excerpts are shaped in approximately the same way.

Group k (true or false) One excerpt

31. This excerpt features descending scales played in unison by several instruments.

32. The rhythm pattern of the scales in this excerpt are built from notes having the same time value.

Group l (true or false) One excerpt

(This excerpt will be preceded by a few measures from both the main and the subordinate themes to help you establish them in your mind.)

33. This excerpt is closely related rhythmically to the main theme.

34. The excerpt is closely related melodically to the main theme.

35. The excerpt is closely related rhythmically to the subordinate theme.

36. This excerpt is closely related melodically to the subordinate theme.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group m (true or false) Two excerpts

37. The melody of the first excerpt is in a higher register than the melody of the second excerpt.

38. The rhythm of the melodies in both excerpts is the same.

39. In both excerpts, the rapid figures accompanying the melody line are played by the low strings.

Group n (true or false) Two excerpts

40. The tones in the descending scale pattern of the first excerpt are in the same rhythm as those of the scale patterns in the second excerpt.

41. Brass instruments are excluded in the scoring of the scale passages in the second excerpt.

42. The scale patterns in both excerpts include woodwind and string instruments.

Group o (multiple choice)

Directions: In each of the items below (43-45), you are to identify the instruments which are playing each excerpt. From the list below each item, choose the response you believe is correct and blacken the corresponding number on the answer sheet. Only one of the choices offered is correct: do NOT make more than one response to each item. Each excerpt will be played three times. (Remember, select only one response for each item.)

43. The instruments playing EXCERPT ONE are:

    1. woodwinds and brass.
    2. bassoons, lower strings
    3. upper and lower strings.
    4. flutes, clarinets, bassoons, upper and lower strings.
    5. flutes, clarinets, and bassoons.

Remember answering code for true-false items:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

44. The instruments playing EXCERPT TWO are:

1. flutes, bassoons, clarinets, and upper strings.
2. upper and lower strings.
3. high woodwinds and strings.
4. upper strings, brass, and timpani.
5. clarinets, upper and lower strings, and timpani.

45. The instruments playing EXCERPT THREE are:

1. woodwinds and horns.
2. upper strings, clarinets, and timpani.
3. woodwinds.
4. flutes, clarinets, and upper strings.
5. upper and lower strings and bassons.

- PART B -

Multiple Choice

Directions:

Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period. It is not advisable to return to Part A to review your answers because your memory of the musical cues probably is faulty. However, you may review Part B.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. you are certain that the best answer is one of those two), it may be profitable for you to guess. In other cases, the odds may be against you.

46. The sonata form is called a ternary form because:

1. The sonata form normally has an introduction, then the main body followed by the coda.
2. The sonata originally had three movements.
3. The main theme is normally cut in a three-part (A B A) pattern.
4. It has three sections: exposition, development and restatement.
5. The exposition is in three parts: main theme, subordinate theme and codetta.

47. If a composer wasn't particularly skilled at constructing transition material or bridge passages, his compositions would suffer in which way?

1. The themes would have less impact.
2. Continuity of movement would be less good.
3. The themes would not blend so well in the context of the movement.
4. The introductory or closing sections would not be musically interesting.
5. The listener might have difficulty in determining the relationship of one theme to another.

48. Suppose an individual purposely composed a work without a theme or themes. What effect would the performance of the work have on the listener?

1. The listener probably would be bored because the melodies would be uninteresting.
2. The listener probably would be bewildered because of the lack of rhythmic continuity in the music.

3. The listener probably would find such a work interesting because it would have many rich harmonies and a complex orchestration.

4. The listener probably would be confused because the melodic lines would be disjunct and lack continuity.

5. The listener probably would be confused because the work would have no "direction".

49. In a sonata form, the listener can identify the development section because in this portion of the music:

1. New patterns of sound are formed from fragments of the theme(s).

2. The theme(s) is (are) presented in different keys.

3. The music becomes involved and complex.

4. The orchestration is usually more colorful.

5. New themes are usually being presented and developed to create interesting comparisons of sounds.

50. If you planned to attend a concert where a sonata was listed on the program, you would expect to hear:

1. a symphony.

2. the first movement of a symphony.

3. an instrumental composition with more than one movement

4. a composition for symphony orchestra in four movements.

5. an instrumental composition in ternary form.

51. In what large sections of the sonata-allegro form might you find bridge passages?

1. Introduction
2. Restatement
3. Development
4. Could be any of those mentioned above.
5. Could be none of those mentioned above.

52. Which of the following lettered patterns is the pattern for the first movement of Mozart's 40th Symphony?

1. A B C
2. A A B A A
3. A B A C
4. A A B A
5. None of these listed is correct.

53. What is the most plausible reason why Mozart did not use an introduction to the first movement of his Symphony in g minor?

1. He may have felt it would not contribute to the beauty of the symphony's form.
2. It was not customary to use an introduction in the sonata-allegro design during Mozart's time.
3. The pure form of the sonata-allegro design does not call for an introductory passage.
4. It would probably be awkward to use an introduction since the rhythm of the main theme is so well marked.

54. Which of the responses below best fits the kind of preparation you made for this test (Mozart's 40th Symphony in g minor, first movement)?

1. I didn't listen to the composition at all.
2. I listened to the composition in one of the listening rooms (tape or record).
3. I have the record at home: I listened to it there.
4. I listened to it where I room (dormitory, fraternity, sorority, rooming house, apartment, etc.).
5. Other.

AUDIO EXCERPTS FOR LISTENING TEST BASED ON MOZART'S 40th (FIRST MOVEMENT)

Group	Excerpt Number	Measure Numbers
Sample	1	14-20
	2	227-234
a	1*	44-50 (plus 1/2 beat)
b	1	44-50 (plus 1/2 beat)
	2	1-9
c	1	1-9
	2	227-233 (with pick-up)
d	1	1-4 (plus 2 beats)
	2	147-152 (with pick-up)
e	1	151 (with pick-up) - 159 (plus 1/2 beat)
	2	261 (with pick-up) - 267 (plus 1/2 beat)
f	1*	139 (with pick-up) - 145 (plus 1 beat)
g	1	1-19 (plus 2 beats)
	2	165 (with pick-up) - 182 (plus 1 beat)
h	1	44-50 (plus 1 beat)
	2	227-233 (plus 1 beat)
i	1	1-8 (plus 2 beats)
	2	103-112 (plus 2 beats)
j	1	104 (with pick-up) - 112 (plus 2 beats)
	2	160-163 (plus 3 beats)
k	1*	88-94 (plus 1 beat)
l	1	1-4 (plus 2 beats)
	2	44-46 (plus 3 beats)
	3	95-100

*Only one excerpt used

MOZART'S 40th (FIRST MOVEMENT)

- 2 -

Group	Excerpt Number	Measure Numbers
m	1	28-32 (plus 3 beats)
	2	198-202 (plus 3 beats)
n	1	254-259 (plus 1 beat)
	2	276-283 (plus 3 beats)
o	1	258-263 (plus 3 beats)
	2	1-8 (plus 2 beats)
	3	106 (with pick-up) - 112 (plus 2 beats)

SCORING KEY
for test on Sonata-Allegro form
and first movement of Mozart's 40th Symphony

	Alternative							Alternative					
Item	1	2	3	4	5	Subtest*	Item	1	2	3	4	5	Subtest
4	1	2	3	4	5	5	29	1	2	3	4	5	5
5	1	2	3	4	5	3	30	1	2	3	4	5	3
6	5	4	3	2	1	5	31	5	4	3	2	1	3
7	5	4	3	2	1	1	32	5	4	3	2	1	4
8	1	2	3	4	5	1	33	5	4	3	2	1	4
9	1	2	3	4	5	4	34	1	2	3	4	5	3
10	5	4	3	2	1	1	35	1	2	3	4	5	4
11	1	2	3	4	5	4	36	1	2	3	4	5	3
12	5	4	3	2	1	2	37	5	4	3	2	1	3
13	1	2	3	4	5	4	38	5	4	3	2	1	4
14	5	4	3	2	1	1	39	1	2	3	4	5	5
15	1	2	3	4	5	4	40	5	4	3	2	1	4
16	1	2	3	4	5	3	41	5	4	3	2	1	5
17	1	2	3	4	5	2	42	5	4	3	2	1	5
18	5	4	3	2	1	1	43	1	1	1	5	1	5
19	5	4	3	2	1	3	44	1	5	1	1	1	5
20	1	2	3	4	5	1	45	1	1	1	1	5	5
21	5	4	3	2	1	5	46	1	1	1	5	1	2
22	5	4	3	2	1	4	47	1	5	1	1	1	2
23	1	2	3	4	5	1	48	1	1	1	1	5	2
24	1	2	3	4	5	1	49	5	1	1	1	1	2
25	5	4	3	2	1	3	50	1	1	5	1	1	2
26	1	2	3	4	5	3	51	1	1	1	5	1	2
27	5	4	3	2	1	1	52	1	1	1	5	1	2
28	1	2	3	4	5	1	53	5	1	1	1	1	2

Subtest codes:

1	Harmony and tonality
2	Knowledge of form
3	Melody
4	Rhythm
5	Timbre

Listening Test

- FORM N - Test Number______

Directions: The composition upon which this test is based is a single movement taken from a symphony: the movement is written in a rondo design. Instead of hearing the whole movement without a break however, it will be played for you in four sections as follows:

Section 1 - The complete rondo theme (playing time: approximately 1-3/4 minutes)

Section 2 - The episode (playing time: approximately 1 minute)

Section 3 - The return of the rondo theme (playing time approximately 1-3/4 minutes)

Section 4 - The coda (playing time: approximately 1 minute)

As you listen to the music, respond to the items based on that particular section of the movement. You will have time to read the items before the music begins, but it will be necessary for you to respond during the playing of the music. When the music for that section is concluded, you will have time to review your responses.

For all true-false items in Part A and Part B, respond in one of the five ways below. Please select the response which most closely reflects your knowledge of the item in each case.

If you are confident that the statement is true, blacken the space numbered "1".

If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly false, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

NOTE: If an item is only partly true, consider the statement false. A statement must be true in all its aspects to be considered true.

Part A

Section 1 - The Complete Rondo Theme (playing time: approximately 1-3/4 minutes)

1. The melody of the theme is formed mainly by the use of scalewise or stepwise intervals (as opposed to leaps or skips).
2. The meter is triple.
3. Melodic repetition is a feature of this section.
4. There is considerable rhythmic contrast between parts of the theme.
5. The theme is in ternary form.

Section 2 - The Episode (playing time: approximately 1 minute)

6. In one passage, the melody is treated contrapuntally.
7. There is a rhythmic relationship between the episode material and the rondo theme (heard in Section 1).
8. The harmonies are mainly minor.
9. Most of the episode is scored for full orchestra.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Section 3 - The Return of the Rondo Theme (playing time: approximately 1-3/4 minutes)

10. Contrasting melodic figures often accompany the melody line of the theme.

11. A new pattern of sound based upon theme fragments appears in this section.

12. The meter changes at least once during this section.

13. This section is scored for full orchestra throughout.

14. Most of the music is in the major mode.

Section 4 - The Coda (playing time: approximately 1 minute)

15. After the trumpet fanfare, the orchestra states the rondo theme.

16. The rondo theme is heard in its entirety in this section.

17. The last few measures of the coda are in the rhythm of the rondo theme.

18. The coda ends in major harmony.

19. The string section plays a sizeable portion of the coda alone.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Part B

Directions: In this part of the test, smaller excerpts of the composition will be played. You will be given time to read and respond to the items for each group. Please respond to the true-false items in the same way as you did for the items in Part A (blacken "1" if you are confident the statement is true, etc.). Each excerpt will be repeated once.

Group a (true or false) Two excerpts

20. Both excerpts are in the minor mode.

21. (This is true: each of the melodic figures in the second excerpt is lower in pitch than the preceding one.) True or false: the melodic figures in the first excerpt are arranged also in descending order.

22. The excerpts are closely related rhythmically.

Group b (true or false) One excerpt

In this group, reference points "A" and "B" will be called out on the tape when the excerpt is being played. The items below refer to these "markers" in the music.

23. At "A" the flute, clarinet and upper strings play the melody: at "B" the flute and oboe play the melody alone.

24. From "A" to "B" is a phrase: from "B" to the end is also a phrase.

Remember answering code:

1 true (confident)
2 true (possible)
3 no idea
4 false (possibly)
5 false (confident)

-TURN PAGES QUIETLY -

Group C (true or false) Two excerpts

25. The melodies of the two excerpts are rhythmically very closely related.

26. The first excerpt features the string section: in the second excerpt all strings are excluded.

27. The rhythm of the accompaniment in the second excerpt is different than in the first excerpt.

Group d (true or false) Two excerpts

28. (This is true: the first excerpt is a portion of the rondo theme.) True or false: excerpt 2 is rhythmically related to the rondo theme.

29. The melody line of the first excerpt is supported by harmony and the melody line of the second excerpt is played in unison.

30. Both excerpts have the same key center.

Group e (true or false) Two excerpts

31. Both excerpts end on tonic harmony.

32. Each excerpt is made up of an antecedent phrase and a consequent phrase.

33. Both excerpts are exactly the same melodically.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group f (true or false) Two excerpts

Excerpt one is a part of the rondo theme as it first appears. Excerpt two is the return of the rondo theme later in the composition. In comparison to the structure of the rondo theme as it is originally presented, in the return of the rondo theme:

34. there is a change of key.

35. strings play the melody.

36. percussion instruments are added.

Group g (true or false) One excerpt

37. The melody of the trumpet call follows a chordal pattern.

38. The chords which follow the trumpet call change harmony more than three times during the excerpt.

39. After the trumpet call, a fragment of the theme is subtly woven into the chord progression.

Group h (multiple choice) One excerpt

Directions: Your will hear the same thematic fragment repeated three times in this excerpt. A different set of instruments plays the fragment each time: you are to decide which group of instruments plays it each of the three times. This procedure will be followed:

1. The piano will play the excerpt first and the fragments will be referred to on the tape as a, b, and c. (All accompanying music will be omitted.)

Remember answer code:

1. true (confident)
2. true (possibly)
3. no idea
4. false (possibly)
5. false (confident)

- TURN PAGES QUIETLY -

2. The orchestra excerpt will be played with the same references (a, b, and c) called out.

3. The orchestra excerpt without lettered references will be played three times.

NOTE: Only ONE answer is correct for each item. Blacken the corresponding number for each item on the answer sheet.

40. The one group of instruments which plays the fragment first ("a") is:

1. upper strings
2. oboes
3. bassoons
4. clarinets
5. flutes

41. The one group of instruments which plays the fragment second ("b") is:

1. upper strings
2. oboes
3. bassoons
4. clarinets
5. flutes

42. The one group of instruments which plays the fragment third ("c") is:

1. upper strings
2. oboes
3. bassoons
4. clarinets
5. flutes

NOTE: You would be ill-advised to alter your responses to items in Parts A and B: you should not rely on your memory for the sounds of the excerpts. Therefore, it is recommended that you do not review your answers to statements in Parts A and B.

Part C

(Multiple Choice)

Directions: Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. you are certain that the best answer is one of those two), it may be profitable for you to guess.

43. Of the situations listed below, which is the most likely situation to signal the beginning of an episode in a rondo design?

    1. A new pattern of sound.
    2. A change of mode and key.
    3. A change of key
    4. A change of mode.
    5. A different orchestration.

44. A composer decides to add an introduction and a coda to a symphonic movement which he has patterned as an A A B A B A design. What would the new labeling be?

    1. A B B C B C B D
    2. A' A A B A B A C
    3. A' A A B A B A B'
    4. no change
    5. Depends upon the content in the introduction and the coda.

45. What would be the most probable pattern of those listed below of a symphonic movement in a rondo design which had two unique episodes?

1. A A' B A' B' A
2. A A B A C A
3. A B C A
4. Any one of those listed above could be possible.
5. None of those listed above could be possible.

46. In the classic rondo design, which of the following conditions would be most likely to characterize the second "A" in a A B A B A C D A pattern?

1. a tendency to weaken the feeling for tonic key center.
2. modulation to a new key center.
3. return to the original key center.
4. a shift to a new key and mode.
5. a shift to a different mode.

47. Please complete the following analogy: bridge is to episode as connection is to:

1. exposition.
2. restatement.
3. variation.
4. digression.
5. modulation.

48. Which movement of a symphony written in the 18th century would most likely be cast in the rondo design?

1. The second and/or third movements.
2. The third movement.
3. The first movement.
4. The second movement.
5. The second and/or fourth movements.

49. Which of the following patterns below comes closest to following the design of the classic rondo model?

1. A A B B
2. A B C
3. A B A' C A
4. A A' B C
5. A B C A B

50. An "episode" in a rondo design compares most closely (in function and placement) to what part of a composition written in the sonata form?

1. A bridge section.
2. A transition section.
3. The recapitulation.
4. The exposition (the section following the introduction).
5. The development.

AUDIO EXCERPTS FOR LISTENING TEST BASED ON HAYDN'S 100th (SECOND MOVEMENT)
(FORM N)

Section	Measure Number
I	1-55 (plus 1 beat)
II	56 (last 3 beats) - 90 (plus 1 beat)
III	92-151 (plus 1 beat)
IV	153 (with pick-up) - end

Group	Excerpt Number	Measure Numbers
a	1	61-64 (plus 1 beat)
	2	70-73 (plus 1 beat)
b	1*	100-111
c	1	1-8
	2	37-44
d	1	1-8
	2	152-159
e	1	1-7 (plus 1 beat)
	2	9-15 (plus 1 beat)
f	1	1-7 (plus 2 beats)
	2	92-98 (plus 1 beat)
g	1*	152-166 (plus 1 beat)
h	1*	167-169 (plus 1 beat)

*Only one excerpt used

SCORING KEY
for follow-up test
Form N

Item	Alternative					Subtest*	Item	Alternative					Subtest
	1	2	3	4	5			1	2	3	4	5	
1	5	4	3	2	1	3	26	5	4	3	2	1	5
2	1	2	3	4	5	4	27	5	4	3	2	1	4
3	5	4	3	2	1	3	28	1	2	3	4	5	4
4	1	2	3	4	5	4	29	5	4	3	2	1	1
5	5	4	3	2	1	3	30	5	4	3	2	1	1
6	1	2	3	4	5	3	31	1	2	3	4	5	1
7	5	4	3	2	1	4	32	5	4	3	2	1	2
8	5	4	3	2	1	1	33	5	4	3	2	1	3
9	5	4	3	2	1	5	34	1	2	3	4	5	1
10	1	2	3	4	5	3	35	1	2	3	4	5	5
11	1	2	3	4	5	3	36	1	2	3	4	5	5
12	1	2	3	4	5	4	37	5	4	3	2	1	1
13	1	2	3	4	5	5	38	1	2	3	4	5	1
14	5	4	3	2	1	1	39	1	2	3	4	5	4
15	1	2	3	4	5	3	40	5	1	1	1	1	5
16	1	2	3	4	5	3	41	1	1	1	5	1	5
17	1	2	3	4	5	4	42	1	5	1	1	1	5
18	5	4	3	2	1	1	43	5	1	1	1	1	2
19	1	2	3	4	5	5	44	1	1	1	5	1	2
20	1	2	3	4	5	1	45	1	5	1	1	1	2
21	1	2	3	4	5	3	46	1	1	5	1	1	2
22	5	4	3	2	1	4	47	1	1	1	5	1	2
23	1	2	3	4	5	5	48	1	1	1	1	5	2
24	1	2	3	4	5	2	49	1	1	5	1	1	2
25	5	4	3	2	1	4	50	1	1	1	1	5	2

*Subtest codes:

1	Harmony and tonality
2	Knowledge of form
3	Melody
4	Rhythm
5	Timbre

Listening Test

- FORM P -   Test Number_______

Directions: The composition upon which this test is based is a single movement taken from a symphony: the movement is written in a theme and variations design. Instead of hearing the whole movement without a break, however, it will be played for you in four sections as follows:

Section 1 - The theme and the first variation (playing time: approximately 5-1/3 minutes)

Section 2 - Variation Two (playing time: approximately 3-1/2 minutes)

Section 3 - Variations Three and Four (playing time: approximately 1-1/2 minutes)

Section 4 - The coda (playing time: approximately 2 minutes)

As you listen to the music, respond to the items based on that particular section of the movement. You will have time to read the items before the music begins, but it will be necessary for you to respond during the playing of the music. When the music for that section is concluded, you will have time to review your response.

For all true-false items in Part A and Part B, respond in one of the five ways below. Please select the response which most closely reflects your knowledge of the item in each case.

If you are confident that the statement is true, blacken the space numbered "1".

If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly true, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

NOTE: If an item is only partly true, consider the statement false. A statement must be true in all its aspects to be considered true.

PART A

Section 1 - The Theme and the First Variation
(playing time: approximately 5-1/3 minutes)

Note: The theme is in two parts. When part two of the theme begins, it will be called out on the tape. The beginning of the first variation will also be noted for you.

1. The first sentence of the theme is played by strings of the orchestra only.
2. (This is true: in part one of the theme the same key center is used throughout.) True or false: in part two of the theme the key center also remains constant.
3. The tempo of the variation is different (slower or faster) than the tempo of the theme.
4. The variation is in the same mode as the theme.
5. The variation is based on both parts one and two of the theme. (Remember: part one and part two of the theme are called out for you on the tape.)

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Section 2 - Variation Two (playing time: approximately 3-1/2 minutes)

6. After the opening sentence is presented, it is immediately repeated two times.

7. The tempo of the variation is not strict: there are several ritards (temporary "slow-ups") and holds.

8. In several passages, the composer places chords on off-the-beat places.

9. Brass instruments are prominent in the melody of the first and second halves of the variation.

10. This variation is a good illustration of the use of contrapuntal texture.

Section 3 - Variations Three and Four (playing time: approximately 1-1/2 minutes)

Note: The beginning of variation four will be noted for you on the tape.

11. Variation three is in the minor mode.

12. Repeated arpeggio patterns accompany the melodic line in the first part of variation three.

13. The rhythm pattern of the melodic lines in variations three and four are essentially the same.

14. (This is true: at the beginning of variation four, accompanying chords are played by the low strings.) True or false: these chords are sustained (held) rather than "moving".

15. All the scales in variation four are ascending rather than descending.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Section 4 - The Coda (playing time: approximately 2 minutes)

16. The coda begins with a French horn solo.

17. A new theme is presented in the coda.

18. There is a development of thematic material in the coda.

19. The coda is primarily in the major mode.

20. (This is true: at the very end of the coda, a fragment of the theme is played.) True or false: this fragment is played by strings.

PART B

Directions: In this part of the test, smaller excerpts of the composition will be played. You will be given time to read and answer the items for each group. Please respond in the same way as you did for the items in Part A (blacken "1" if you are confident the statement is true, etc.). Each excerpt will be repeated once.

Group a (true or false) Two excerpts

(The first excerpt is part one of the theme)

21. The rhythm pattern of the melody of the second excerpt is the same as that of the theme.

22. The second excerpt is based on the melody of the theme.

23. The rhythm of the material played by the accompanying instruments in both excerpts is similar.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group b (true or false) Two excerpts

24. The second excerpt is a variation of the first excerpt.

25. Both excerpts are in the same key.

26. The rhythm of the accompanying figures to the melodies of both excerpts is the same.

Group c (true or false) Two excerpts

27. Excerpt two ends on tonic (or "key center") harmony.

28. Both excerpts are in the minor mode.

29. Both excerpts maintain a steady tempo.

Group d (true or false) Two excerpts

30. Both excerpts have the same key center.

31. Both excerpt one and excerpt two end on a half cadence.

32. The rhythms of the accompanying figures to the melodies of both excerpts are the same.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group e (true or false) Two excerpts

33. The harmonies of the sustained chord progressions in both excerpts are the same.

34. Both excerpts are orchestrated in the same way.

35. The rhythmic patterns of the accompanying figures in both excerpts are the same.

Group f (true or false) Two excerpts

36. (This is true: both excerpts are variations of the theme.) True or false: the melody line of each variation is structured in the same way.

37. The melody line of excerpt one consists primarily of stepwise intervals (as opposed to leaps).

38. The woodwind section plays the same figures in both excerpts.

Group g (multiple choice) One Excerpt

Directions: In the following excerpt, the same thematic fragment is played three times in sequence. A different instrument plays the fragment each time; you are to decide which instrument plays it each of the three times. This procedure will be followed:

1. The piano will play the excerpt first; the fragments will be referred to on the tape as a, b, and c. (All accompanying music will be omitted.)

2. The orchestra excerpt will be played with the same reference points called out (a, b, and c).

3. The orchestra excerpt without lettered references will be played three times.

Remember the answering code for true-false:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

NOTE: Only one answer is correct for each item. Blacken only one response on the answer sheet for each item.

39. The instrument which plays the fragment first ("a") is:

    1. bassoon
    2. clarinet
    3. flute
    4. horn
    5. oboe

40. The instrument which plays the fragment second ("b") is:

    1. bassoon
    2. clarinet
    3. flute
    4. horn
    5. oboe

41. The instruemnt which plays the fragment third ("c") is:

    1. bassoon
    2. clarinet
    3. flute
    4. horn
    5. oboe

NOTE: You would be ill-advised to alter your responses to items in Parts A and B: you should not rely on your memory for the sounds of the excerpts. Therefore, it is recommended that you do not review your answers to statements in Parts A and B.

- TURN PAGES QUIETLY -

PART C

(Multiple Choice)

Directions: Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. you are certain that the best answer is one of those two), it may be profitable for you to guess.

42. Below are listed some characteristics of a theme. Which is the most useful as the criterion for a theme meant to be used as the basis for a theme and variations design?

    1. It is simple.
    2. It is in a binary form.
    3. It is based on familiar folk song material.
    4. It is "singable".
    5. It is contained in a range in which the instruments of the orchestra sound best.

43. Which of these seems to be the most likely structure for the construction of a coda in a theme and variations design?

    1. Introduction of a new theme or themes.
    2. A variation of the theme.
    3. Restatement of the theme.
    4. Development of thematic material.
    5. Any of the above ideas would be useful in structuring a coda.

44. Which of the following alterations or modifications would NOT be usual or acceptable in a variation in a theme and variations design?

   1. The alteration of key, mode and rhythmic structure simultaneously.

   2. The use of strange harmonies.

   3. The alteration of mode.

   4. The introduction of new theme.

   5. The use of contrapuntal textures.

45. Which of the following changes by a composer within a single variation would result in the greatest modification in timbre?

   1. He uses a new and contrasting melodic line pitted against the melody of the theme to create a contrapuntal texture.

   2. He asks for interesting shadings of sound, with a liberal use of crescendoes, decrescendoes, and sudden dynamic changes.

   3. He shows on the score that the orchestra should make subtle alterations in the tempo from time to time (slower and faster).

   4. He indicates that the orchestra should change the dynamic level (the volume).

   5. He writes the variation for a different combination of instruments.

46. Please complete the following analogy: Theme is to variation as unity is to:

   1. difficulty

   2. tonality

   3. novelty

   4. monotony

   5. simplicity

47. Please complete the following analogy: Theme is to theme and variations design as ______________ is to the sonata-allegro design.

1. development

2. theme

3. restatement

4. bridge

5. episode

48. Assuming we vary the theme in only one way, which of the following alterations would most likely produce the greatest amount of variations? (Note: assume that "listener-difference" is kept constant.)

1. Change of key only.

2. Alteration of the melody only.

3. Change of mode only.

4. Addition of new supporting harmonies only.

5. The scoring of the melody for different instruments only.

49. Which of the following structures would a composer most likely use to make a smooth "connection" between variations?

1. A consequent phrase

2. A cadence.

3. A modulation.

4. A bridge.

5. A codetta.

50. What would be the probable reaction of a listener to a variation which was so remotely related to the theme that it was not recognizable as a variation of the theme?

1. A strong feeling for unity and contrast.
2. No particular difference: the contrast might actually introduce a feeling of relief from too much "sameness".
3. A feeling of repose stemming from the contrast.
4. A feeling that the conclusion of the composition was **imminent**.
5. A feeling of confusion and disorder.

AUDIO EXCERPTS FOR LISTENING TEST BASED ON BEETHOVEN'S 5th (SECOND MOVEMENT)

(FORM P)

Section	Measure Number
I	1-97 (plus 2 beats)
II	99 (with pick-up) - 165 (plus 2 beats)
III	167 (with pick-up) - 204 (plus 2 beats)
IV	206 (with pick-up) - 247

Group	Excerpt Number	Measure Numbers
a	1	1-7 (plus 1 beat)
	2	167 (with pick-up) - 173 (plus 1 1/2 beats)
b	1	23 (with pick-up) - 25 (plus 1 beat)
	2	99 (with pick-up) - 105 (plus 1/4 beat)
c	1	185-190 (plus 1 beat)
	2	167 (with pick-up) - 173 (plus 1 1/2 beats)
d	1	32 (with pick-up) - 37 (plus 2 beats)
	2	23 (with pick-up) - 30 (plus 1 beat)
e	1	39 (with pick-up) - 47 (plus 1 beat)
	2	88 (with pick-up) - 96 (plus 1 beat)
f	1	99 (with pick-up) - 105 (plus 1/4 beat)
	2	106-113 (plus 1/4 beat)
g	1*	128-132 (plus 1 beat)

*Only one excerpt used

SCORING KEY
for follow-up test
Form P

Item	Alternative					Subtest*	Item	Alternative					Subtest
	1	2	3	4	5			1	2	3	4	5	
1	5	4	3	2	1	5	26	1	2	3	4	5	4
2	1	2	3	4	5	1	27	1	2	3	4	5	1
3	1	2	3	4	5	4	28	1	2	3	4	5	1
4	5	4	3	2	1	1	29	5	4	3	2	1	4
5	5	4	3	2	1	3	30	1	2	3	4	5	1
6	5	4	3	2	1	3	31	1	2	3	4	5	1
7	5	4	3	2	1	4	32	5	4	3	2	1	4
8	1	2	3	4	5	4	33	5	4	3	2	1	1
9	1	2	3	4	5	5	34	5	4	3	2	1	5
10	1	2	3	4	5	3	35	1	2	3	4	5	4
11	5	4	3	2	1	1	36	5	4	3	2	1	3
12	5	4	3	2	1	3	37	1	2	3	4	5	3
13	5	4	3	2	1	4	38	1	2	3	4	5	5
14	1	2	3	4	5	5	39	1	5	1	1	1	5
15	5	4	3	2	1	3	40	5	1	1	1	1	5
16	1	2	3	4	5	5	41	1	1	5	1	1	5
17	1	2	3	4	5	3	42	5	1	1	1	1	2
18	5	4	3	2	1	2	43	1	1	1	5	1	2
19	5	4	3	2	1	1	44	1	1	1	5	1	2
20	1	2	3	4	5	5	45	1	1	1	1	5	2
21	5	4	3	2	1	4	46	1	1	5	1	1	2
22	5	4	3	2	1	3	47	1	5	1	1	1	2
23	1	2	3	4	5	4	48	1	5	1	1	1	2
24	1	2	3	4	5	3	49	1	1	1	5	1	2
25	5	4	3	2	1	1	50	1	1	1	1	5	2

*Subtest codes:

1	Harmony and tonality
2	Knowledge of form
3	Melody
4	Rhythm
5	Timbre

Listening Test

- FORM O - Test Number______

Directions: The composition upon which this test is based is a single movement taken from a symphony: the movement is written in a sonato-allegro design. Instead of hearing the whole movement without a break, however, it will be played for you in four sections as follows:

Section 1 - The exposition (playing time: approximately 4 1/4 minutes)

Section 2 - The development (playing time: approximately 1 3/4 minutes)

Section 3 - The restatement (playing time: approximately 2 1/3 minutes)

Section 4 - The coda (playing time: approximately 1 1/2 minutes)

As you listen to the music, respond to the items based on that particular section of the movement. You will have time to read the items before the music begins, but it will be necessary for you to respond during the playing of the music. When the music for that section is concluded, you will have time to review your responses.

For all true-false items in Part A and Part B, respond in one of the five ways below. Please select the response which most closely reflects your knowledge of the item in each case.

If you are confident that the statement is true, blacken the space numbered "1".

If you think the statement is possibly true, blacken the space numbered "2".

If you have no idea about the accuracy of the statement, blacken the space numbered "3".

If you believe that the statement is possibly false, blacken the space numbered "4".

If you are confident that the statement is false, blacken the space numbered "5".

NOTE: If an item is only partly true, consider the statement false. A statement must be true in all its aspects to be considered true.

PART A

Section 1 - The Exposition (playing time: approximately 4-1/4 minutes)

1. The main theme and the subordinate theme are pitched in different keys.

2. The main theme and the subordinate theme are in different modes (i.e. one is in major and the other is in minor).

3. A ritard (i.e. a temporary "slowing up of the tempo") occurs only in the subordinate theme.

4. (This is true: the exposition is played two times.) True or false: the second time the exposition is played, *both the main and subordinate* themes reappear.

5. In the last few measures of the exposition, the strings repeat several times a figure featuring skips of greater than an octave.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Section 2 - The Development (playing time: approximately 1-3/4 minutes)

6. There is a good deal of contrapuntal writing in this section.

7. There are times in this section when the orchestra slows the beat temporarily.

8. The development section is orchestrated more fully at the end of the section than at the beginning.

9. Both the subordinate theme and the main theme are used in the development section.

10. The rhythms are more complex toward the end of the section than they are at the beginning.

Section 3 - The Restatement (playing time: approximately 2-1/3 minutes)

11. The main theme is first restated by the string section in unison.

12. The subordinate theme returns in a major mode.

13. There are some bridging or connecting passages in the restatement section.

14. There are meter changes in this section.

15. Melodic and accompanying lines are mostly smooth and flowing in style.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Section 4 - The Coda (playing time: approximately 1-1/2 minutes)

16. The complete main theme is stated in at least one place in the coda.

17. (This is true: several times the orchestra plays large "block" chords.) True or false: these chords are in the rhythm of material taken from one of the themes.

18. The harmonies found in the coda are primarily in the major mode.

19. Most of the coda is scored for full orchestra.

20. Toward the end of the coda, the rhythms become more complicated.

PART B

Directions: In this part of the test, smaller excerpts of the composition will be played. You will be given time to read and answer the items for each group. Please respond in the same way as you did for the items in Part A (blacken "1" if you are confident the statement is true, etc.). Each excerpt will be repeated once.

Group a (true or false) One excerpt

Note: Portions of the main theme and subordinate theme are played for you first to establish them in your mind. The items below refer to the excerpt which follows.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

21. The rhythm of the main theme is the predominant rhythm of the excerpt.

22. (This is true: the high strings play a melody at the same time that a melody is played in the low strings.) True or false: the melody in the high strings comes from the main theme: the melody in the low strings comes from the subordinate theme.

23. The thematic expansion begins in the major mode, but changes to the minor mode toward the end of the excerpt.

Group b (true or false) One excerpt

Note: A small portion of the main theme is played first for your benefit. Items are based on the excerpt which follows.

24. The excerpt is in the same key and mode as the theme.

25. (This is true: a variation of most of the main theme is included in this section.) True or false: the variation is better classified as a melodic variation than a rhythmic variation.

26. The melody is played by strings and woodwinds.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group c (true or false) One excerpt

Note: Again, a portion of the main theme is played for you first. The items below refer to the excerpt which follows (taken from the coda). Each of these excerpts will be played three times.

27. At the very end of the excerpt we hear a fragment of the main theme.

28. The chords in the coda excerpt follow the beat of the meter.

29. The chords have off-the-beat emphasis as well as on-the beat emphasis.

30. When sections of the orchestra alternate in speaking the chords, the alteration is between the string section and the woodwind section.

31. The chords are all in major tonality.

Group d (true or false) Two excerpts

The first excerpt is the main theme as it first appears in the exposition. The second excerpt is the first appearance of the main theme in the restatement.

32. The theme appears in the same key in both excerpts.

33. The theme is in the same form in the restatement as it is in the exposition.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group e (true or false) Two excerpts

The first excerpt is the subordinate theme as it first appears in the exposition. The second excerpt is the subordinate theme as it first appears in the restatement.

34. The melody of the subordinate theme is played in octaves (instead of unison) in both excerpts.

35. The subordinate theme appears in a different key in the restatement than it was presented in the exposition.

36. The melody in the exposition is played by strings: in the restatement the melody is scored for strings and some woodwinds.

Group f (true or false) One excerpt

Note: This excerpt will be played three times.

37. The harmonies in this excerpt change more than three times.

38. The sustained chords which accompany the ascending scales descend gradually in contrary motion to the ascending scales.

39. This passage can be considered to be more in the style of a development of thematic material than a transition or bridge.

40. Judging by its structure, it is possible that this passage could come from either the development section or the coda.

Remember answering code:

1 true (confident)
2 true (possibly)
3 no idea
4 false (possibly)
5 false (confident)

- TURN PAGES QUIETLY -

Group g (multiple choice) One excerpt

Directions: You will hear the same thematic fragment repeated four times in sequence in this excerpt. A different set of instruments plays the fragment each time: you are to decide which group of instruments plays it each of the four times. This procedure will be followed:

1. The piano will play the excerpt first and the order of the appearance of the fragment will be referred to on the tape as a, b, c, and d (all accompanying music will be omitted).

2. The orchestra excerpt will be played with the same references (a, b, c, and d) called out.

3. The orchestra excerpt without the lettered references will be played three times.

NOTE: Only ONE answer is correct for each item. Blacken the corresponding number for each item on the answer sheet.

41. The instruments which play the fragment first ("a") are the (only one answer):

    1. bassoons
    2. clarinets
    3. flutes
    4. oboes
    5. violins

42. The instruments which play the fragment second ("b") are the (only one answer):

    1. bassoons
    2. clarinets
    3. flutes
    4. oboes
    5. violins

43. The instruments which play the fragment third ("c") are the (only one answer):

    1. bassoons
    2. clarinets
    3. flutes
    4. oboes
    5. violins

- TURN PAGES QUIETLY -

44. The instruments which play the fragment fourth ("d") are the (only one answer):

1. bassoons	4. oboes
2. clarinets	5. violins
3. flutes	

NOTE: You would be ill-advised to alter your responses to items in Parts A and B: you should not rely on your memory for the sounds of the excerpts. Therefore, it is recommended that you do not review your answers to statements in Parts A and B.

PART C

(Multiple Choice)

Directions: Select the best answer to the items and blacken the space under the number on the answer sheet corresponding to the number of the answer you select. When you have finished this part, please remain in your seat until the end of the period.

Don't guess wildly on this part of the test. If you don't know the answer, do not respond. On the other hand, if you are able to narrow the choices to two (i.e. you are certain that the best answer is one of those two), it may be profitable for you to guess.

45. We expect to find the use of variation in a composition structured in the theme and variations design. However, it is not unusual for a composer to use the variation technique in the sonata form because:

1. it has beautiful simplicity.

2. the variation technique is more clearly understood by listeners.

3. it provides contrasting textures.

4. the sonata form is a modification of the theme and variations design.

5. it gives the themes new luster.

46. Of the following, which seems to be the most plausible reason for including a restatement (or recapitulation) in the sonata-allegro form?

1. To create a contrast to the development section.
2. To return the listener to the key with which the composition was begun.
3. To give a good balance or pleasing proportion to the composition.
4. To create another opportunity for the composer to show his skill at developing more variation in the design.
5. To pull together the dynamic forces of harmonic, rhythmic and melodic manipulation as well as orchestration to bring the work to a forceful conclusion.

47. The term "sonata-allegro" in describing the form of a composition implies which of the following specific factors?

1. Instrumental music in a fast tempo.
2. Instrumental or choral music in a multi-movement structure.
3. Music with more than one theme and a rapid tempo.
4. A major (large) composition with or without an introduction and coda.
5. A composition for solo instruments or group of instruments in four movements or less.

48. Of the following, which seems to be the most plausible reason why, in the evolvement of the sonata-allegro design, two themes have come to be used instead of one?

1. To maintain listener interest.

2. To insure that enough material was available from which the composer could make new patterns and designs.

3. In order to build more melody into the sonata allegro design.

4. To "set off" the main theme on a background of different material.

5. To increase the likelihood that contrasting keys could be used throughout the work.

49. Perhaps the most difficult of the sections in a sonata-allegro design for the listener to follow, at least in the first few auditions, is the development sections. Why is this the case?

 1. The order of presentation of thematic material is usually reversed.

 2. It is usually longer and the listener has more to remember.

 3. More instruments of the orchestra are used by the composer in this section.

 4. The development section is in the middle of the composition and the listener may have a hard time remembering the themes.

 5. It is difficult for the listener to know what forms or patterns will emerge.

50. Please complete the following analogy: Tonic key is to exposition as distantly-related key is to:

 1. coda

 2. development

 3. restatement

 4. introduction

 5. bridge

AUDIO EXCERPTS FOR LISTENING TEST BASED ON BEETHOVEN'S 8th (FIRST MOVEMENT)
(FORM O)

Section	Measure Number
I	1-103 (plus 1 beat)
II	104-189 (plus 1 beat)
III	190-300 (plus 1 beat)
IV	301-373

Group	Excerpt Number	Measure Numbers
a	Main Th.	1-3 (plus 1 beat)
	Sub. Th.	38 (with pick-up) - 41
	Excerpt	168-175
b	Main Th.	1-3 (plus 1 beat)
	Excerpt	323-332
c	Main Th.	1-3 (plus 1 beat)
	Sub. Th.	38 (with pick-up) - 41
	Excerpt	360-373
d	1	1-11 (plus 1 beat)
	2	190-196 (plus 1 beat)
e	1	33 (with pick-up) - 45 (plus 1 beat)
	2	235 (with pick-up) - 242 (plus 1 beat)
f	1*	311-320
g	1*	120-123 (plus 1/2 beat)

*Only one excerpt used

SCORING KEY
for follow-up test
Form O

Item	Alternative					Subtest*	Item	Alternative					Subtest
	1	2	3	4	5			1	2	3	4	5	
1	5	4	3	2	1	1	26	1	2	3	4	5	5
2	1	2	3	4	5	1	27	5	4	3	2	1	3
3	5	4	3	2	1	4	28	5	4	3	2	1	4
4	5	4	3	2	1	3	29	1	2	3	4	5	4
5	1	2	3	4	5	3	30	1	2	3	4	5	5
6	5	4	3	2	1	3	31	5	4	3	2	1	1
7	1	2	3	4	5	4	32	5	4	3	2	1	1
8	5	4	3	2	1	5	33	1	2	3	4	5	2
9	1	2	3	4	5	3	34	5	4	3	2	1	3
10	5	4	3	2	1	4	35	5	4	3	2	1	1
11	1	2	3	4	5	5	36	1	2	3	4	5	5
12	5	4	3	2	1	1	37	5	4	3	2	1	1
13	5	4	3	2	1	2	38	1	2	3	4	5	3
14	1	2	3	4	5	4	39	1	2	3	4	5	2
15	1	2	3	4	5	3	40	5	4	3	2	1	2
16	1	2	3	4	5	3	41	5	1	1	1	1	5
17	1	2	3	4	5	4	42	1	5	1	1	1	5
18	5	4	3	2	1	1	43	1	1	1	5	1	5
19	5	4	3	2	1	5	44	1	1	5	1	1	5
20	1	2	3	4	5	4	45	1	1	5	1	1	2
21	5	4	3	2	1	4	46	1	1	5	1	1	2
22	1	2	3	4	5	3	47	5	1	1	1	1	2
23	5	4	3	2	1	1	48	1	1	1	5	1	2
24	5	4	3	2	1	1	49	1	1	1	1	5	2
25	1	2	3	4	5	4	50	1	5	1	1	1	2

*Subtest codes:

1 Harmony and tonality
2 Knowledge of form
3 Melody
4 Rhythm
5 Timbre

PREFERENCE FORM

Music 112

Name________________________________ Date_________________________
Instructor_________________

1. Die Moldau (Smetana)
2. 94th Symphony, 2nd movement (Haydn)
3. Romeo & Juliet (Tschaikowsky)
4. 101st Symphony, 4th movement (Haydn)
5. Scheherazade (Rimsky-Korsakoff)
6. 40th Symphony, 1st movement (Mozart)

__DIRECTIONS__: For each possible pair (see below) of the compositions listed above, circle the letter of the one you like the __better__ of the two. Some preferences will be easier to state than others; in such instances, circle the letter of the one you __think__ you like the better, even though it may be an impulsive choice. (You have all had the opportunity to listen to these six compositions during this semester.)

__NOTE:__ If you have __not__ listened to all the compositions listed above, please circle the number(s) preceding the name of the composition(s).

1. a. Die Moldau
   b. 101st Symphony

2. a. 94th Symphony
   b. 40th Symphony

3. a. Scheherazade
   b. Die Moldau

4. a. 94th Symphony
   b. 101st Symphony

5. a. 101st Symphony
   b. Scheherazade

6. a. Die Moldau
   b. 40th Symphony

7. a. 94th Symphony
   b. Romeo & Juliet

8. a. Scheherazade
   b. 40th Symphony

9. a. 94th Symphony
   b. Die Moldau

10. a. 94th Symphony
    b. Scheherazade

11. a. Scheherazade
    b. Romeo & Juliet

12. a. 40th Symphony
    b. 101st Symphony

13. a. Romeo & Juliet
    b. 101st Symphony

14. a. 40th Symphony
    b. Romeo & Juliet

15. a. Romeo & Juliet
    b. Die Moldau

LETTER OF TRANSMITTAL
FOR QUESTIONNAIRE

May 19, 1967

Dear

In behalf of the music department, please accept my thanks for the help you gave us in our evaluation of the program tapes in Mu 112 this semester. The time you spent on reading and listening to the experimental materials has been much appreciated by the department. We sincerely hope that the learning experience has been of value to you too.

It will be very useful for us to obtain your opinions regarding the value of the programed text-and-tape approach to preparing your outside listening assignments. Won't you please fill out the enclosed form and mail it in the addressed, stamped envelope? You need not sign your name; anonymity will be preserved. The code number on the sheet is for purposes of analysis only.

You will not need more than five minutes to check your responses; kindly return the form promptly. Thank you very much.

Sincerely yours,

Carl B. Nelson
Professor
Department of Music

CBN:nm
Enc.

QUESTIONNAIRE

TO BE RETURNED TO: Carl B. Nelson
Department of Music
State University College
Cortland, New York

CODE NUMBER

Directions: Please place a check mark in front of the responses which best represent your opinion of the tape and tape materials which you used in the tape listening room.

1. The manipulation of the tapes was: (check one)

___ a. Easier than using records.
___ b. Just as easy as using records.
___ c. More difficult than use of records.

2. Did you find the tape and tape materials helpful in learning to listen to the composition(s)? (check one)

___ a. Yes, very much so.
___ b. I could have learned as much using records and other aids.
___ c. I didn't learn as much as by using records.

3. Were the tape materials helpful in teaching you meanings of words and phrases describing musical sounds and music terminology? (check one)

___ a. Yes.
___ b. No.
___ c. I don't know.
___ d. Other____.

4. Do you feel that the amount of time you spent using the tape and tape materials benefited you commensurately? (check one)

___ a. Yes, definitely.
___ b. Probably, yes.
___ c. No.
___ d. I don't know.
___ e. Other____.

5. Was the use of music notation in the text useful? (check one)

___ a. Yes, without it I don't believe I would have learned as much.
___ b. Yes, it probably helped.
___ c. I don't think it was a significant factor.
___ d. It didn't help at all.
___ e. It was confusing.

6. Did the tape materials help you to learn to follow the orchestra score? (check one)

___ a. Yes, they definitely helped.
___ b. They probably helped somewhat.
___ c. They had no effect on my understanding the score.

7. Were the piano excerpts helpful? (check one)

___ a. Yes, they helped to point out sounds in the music music of which I wasn't aware.
___ b. Yes, some of the time they clarified points for me.
___ c. I believe that I could have done as well without them.

8. Did you feel that you could adapt the tape materials to your individual needs? (check one)

___ a. Yes, I found that the materials were constructed so that I could repeat or go as fast or slow as I wished.
___ b. Yes, although I didn't make any special effort to use them to suit my particular needs.
___ c. No.
___ d. Other____.

9. Would you recommend that tape materials such as the ones you studied be utilized as teaching tools for Mu 112? (check one)

___ a. Yes, by all means. They are powerful teaching devices.
___ b. Yes, some students could profit from them.
___ c. No, records and scores alone are sufficient.

10. Were the "steps" in the text which accompanied the tapes suitably arranged for Mu 112? (check one)

___ a. Yes, they were small and proceeded very gradually; this is the way the text should be written for students enrolled in a beginning listening course.
___ b. Most of the time they were just about right, however, some of the time they were too small and other times they assumed too much knowledge.
___ c. No, most of the time they assumed too much knowledge and moved too rapidly.
___ d. No, most of the time they were too small and proceeded too slowly.
___ e. Other____.

11. Did you feel that the tape material which you used in the tape listening room helped you in understanding other listening assignments or lectures in Mu 112? (check one)

___ a. Yes, I definitely feel there was a carry-over, or a transfer to my other work.
___ b. No, I definitely feel the amount of transfer was negligible.
___ c. Other____.

12. The texts which accompanied the tapes: (check all those which best reflect your opinion)

___ a. are interesting.
___ b. are well-written.
___ c. include important material.
___ d. are clear and concise.
___ e. Other____.

13. The tapes: (check all those which best reflect your opinion)

___ a. have clear and easy-to-hear sounds.
___ b. have important and meaningful references.
___ c. are technically well-constructed.
___ d. have little sound distortion or background noise.
___ e. Other____.

REMARKS: (optional)

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION

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TITLE

"The Effectiveness of the Use of Adjunct Programed Analyses of Musical Works on Students' Perception of Form" (Final Report)

PERSONAL AUTHOR(S)

Nelson, Carl B.

INSTITUTION (SOURCE)

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RETRIEVAL TERMS

Programed analyses of musical works
Evaluation of aural perception for art forms
Programed analyses for non-music majors
Analysis of preference changes
Programed analyses in music literature

IDENTIFIERS

ABSTRACT

The central aim of this experiment was to determine the effectiveness of the use of programed analyses using tape adjuncts for developing individuals' aural skills for perceiving structural components of selected compositions. Generalizations were intended primarily for persons with a traditional non-specialist background of musical training represented in this study by a sample of 339 non-music major college undergraduates. The use of a balanced multiple comparisons design made it possible to test the hypotheses in several ways; because students were grouped in three classes, the experimental conditions were replicated by class and instructor. Results showed that the programs significantly improved the aural perception of the experimental subjects compared to the controls with respect to specific sub-skills. The effect of placement of the programs in the term, the numbers of programs studied, and forms of the works programed was not so clearly established with respect to students' ability to transfer aural skills to works not previously audited. A survey of all experimental subjects revealed they had no difficulty in manipulating the tape adjuncts and that they were favorably impressed by the teaching effectiveness of the programs. Students' preferences for specific compositions were not visibly affected by study of the programs.